

I H C ALMANAC AND ENCYCLOPEDIA

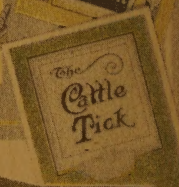
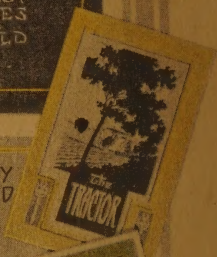
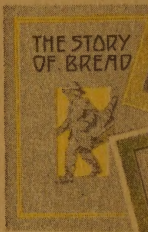
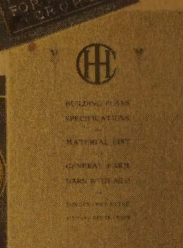


INTERNATIONAL HARVESTER LINES



IHC SERVICE BUREAU

The Service Bureau not only furnishes free of charge authentic information on such farm subjects as land drainage, soils, farm crops, etc., but has published from time to time educational booklets dealing with agricultural subjects. These booklets are distributed to all who are interested, and may be obtained by writing the I H C Service Bureau, Harvester Building Chicago, U. S. A.





I H C

ALMANAC AND ENCYCLOPEDIA

Five years ago, when the first I H C Almanac and Encyclopedia was issued, we aimed to prepare a book which would deal with the practical side of farm and country life. To that end we incorporated tables of useful information and authoritative articles of an educational character.

In this, the 1913 issue, we feel that we have more nearly accomplished our original purpose than in any other issue. We have supplied in compact and accessible form, authentic information on many phases of farm life.

In addition, we have retained the astronomical data and calculations which formed such a noteworthy part of all earlier Almanacs.

We hope the reader will find this book a little more valuable than the preceding one. To all who are striving to improve agricultural methods it is respectfully dedicated.

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International Harvester Company of America
(Incorporated)

A-11C-C

CHICAGO, U S A

ARTHUR T. WILLIAMS



IHC ALMANAC & ENCYCLOPEDIA

INDEX

	PAGE		PAGE
Agriculture The Department of.....	17	June Calendar.....	24
Agriculture, Experimental Stations.....	17	Land, Doubling Value of.....	43
Agriculture, Standard Books on.....	73	Land, Measurement of.....	57
Alfalfa.....	71	Lime, Use of.....	29
April Calendar.....	20	Limitations, Statutes of.....	70
August Calendar.....	28	Lumber Measurement Table.....	70
Auto Wagon.....	81	Machine Shed.....	92
Bank Account, How to Handle.....	31	Manure, Analysis of Stable.....	25
Brick Walls.....	69	Manure, How Much to Spread.....	25
Builders, Information for.....	69	Manure, Relation to Moisture.....	27
Bulletins, Farmers'.....	19	Manure, When to Top Dress.....	27
Bushels, Statutory Weights of.....	84	March Calendar.....	18
Bushes, How Long They Will Bear.....	65	May Calendar.....	22
Calendar Signs, Explanation of.....	3	Money, Foreign.....	13
Calendar Pages, Explanation of.....	3	Money Orders.....	15
Canning, Methods of.....	75	Money, Transmitting through Banks.....	15
Chronological Cycles.....	3	November Calendar.....	34
Church Days.....	5	October Calendar.....	32
Concrete, Helpful Hints About.....	59	Parcels Post.....	13, 15
Cooking Time Table.....	74	Phosphorus, Use of.....	29
Corn Machines.....	56	Planets, The.....	4
Corn Planters.....	52	Planets, Situation of.....	4
Corn, Prize Ear.....	52	Plant Food Removed by Various Crops.....	25
Corn, How to Select.....	52	Plant, When to.....	63
Corn, Rules for Measuring.....	57	Plowing, Deep.....	39
Corn Shellers.....	53	Postage, Rates of.....	13
Cows Feed, Who Pays for.....	62	Power House on the Farm.....	87
Crops, Plant Food Removed per Acre.....	25	Progress and Plenty.....	48
December Calendar.....	36	Road Construction, Cost of.....	45
Domestic Science, Books on.....	73	Road Making, Principles of.....	43
Drilling vs. Broadcasting.....	47	Road Drag, How to Make a.....	45
Eclipses.....	7	Seasons, The.....	5
Ember Days.....	5	Seed Bed, What it Means to Plant Growth.....	33
Emergency and Accident Table.....	78	Seed, How to Select.....	46
Engine, Work of Gasoline.....	86	Seeds, Usual Weight per Bushel.....	63
Fable, Farmer Who Waited.....	23	Germination, Table of.....	65
Fable, Old Fashioned Farmer.....	49	Length of Germ Life.....	65
Fable, Inconsistent Farmer.....	85	Quantity to Sow per Acre.....	65
Farming with Tractors.....	42	When to Plant.....	63
Farm Accounting.....	82	September Calendar.....	30
Farm Ice House.....	90	Service Bureau, I H C.....	93
Farm Machines, Care of.....	61	Shingles, Covering Capacity.....	69
Farm Water Supply.....	88	Silage, Amount to Feed.....	55
February Calendar.....	16	Silos, Capacity of.....	55
Fireless Cooker.....	80	Silos and Silage.....	54
Fly Catechism.....	80	Tillage Implements.....	38
Fruit Growing, Books on.....	74	Time, Eras of.....	3
Furrow, Widest Turned.....	41	Time, How to Obtain.....	10
Gestation Table.....	57	Time, Standard.....	7
Grain Estimates.....	53	Time Chart, Explanation of.....	4
Ground Grain, Advantages of.....	64	Time, Standard Table, U. S.....	9
Hay Machines and Tools.....	50	Threshers, Advantage of Individual.....	58
Hay Presses, I H C.....	51	Tractor Farming.....	65
Hay, Rule for Estimating.....	57	Trees, How Long They Will Bear.....	65
Heavens, Chart of.....	6	Trees, Planting Distance.....	65
Helps for Housewives.....	74	Wagon, How to Select.....	68
Home Emergency Chest.....	76	Walls, Stone and Brick.....	69
Homestead Laws.....	72	Water Supply on Farm.....	88
Incubation Table.....	57	Weather Forecasting.....	11
Interest, Compound.....	67	Weights and Measures, Table of.....	66
Interest, Legal Rate of.....	70	Weights and Measures, Household.....	74
Interest, Simple, Table of.....	67	Weights and Measures, Deviation in Laws.....	84
January Calendar.....	14	Weights for Barn Use.....	53
July Calendar.....	26		

I H C ALMANAC AND ENCYCLOPEDIA FOR 1913

Astronomical Calculations

By BERLIN H. WRIGHT, Deland, Florida

Eras of Time

The Gregorian Year 1913 corresponds to the following eras:

From July 4th the 138th year of the Independence of the United States.

The year 7421-22 of the Byzantine Era; year 7422 begins September 1.

The year 8022 of the Greek Church, beginning January 14.

The year 5673-74 of the Jewish Era; year 5674 begins at sunset October 1.

The year 1331-32 of the Mohammedan Era; year 1332 begins November 30.

The year 6626 of the Julian Period, and January 1, 1913, is the 2,419,769th day since the beginning of that era.

Chronological Cycles

Dominical Letter.....E	Solar Cycle.....	18
Epact (Moon's age, January 1)...22	Roman Indiction.....	11
Lunar Cycle or Golden Number..14	Jewish Lunar Cycle.....	11

Explanation of the Calendar Pages

All the calculations are based upon mean or clock time, except the Moon's Phases, which are of that standard within which zone the provinces named are located. The Sun's rising and setting are for the upper limb, corrected for parallax and refraction. In the case of the Moon no correction is needed, as in the Sun, for "parallax and refraction" with her are of opposite nature and just balance each other. The figures given, therefore, are for the Moon's center on a true horizon, such as the ocean or a large plain affords.

The calculations in each of the geographical divisions of each calendar page will apply with sufficient accuracy to all places in the contiguous North American zones indicated by the headings of the divisions.

Although the 24-hour system of reckoning is used on some of the Canadian railways in order to reduce the chance of error in running trains, it has not been generally adopted.

Explanation of Signs on Calendar Pages

The signs used are as follows: $\oslash$, conjunction or near approach; $\odot$, opposition or 180° from the Sun; $\square$, quadrature or 90° from the Sun; $\odot$, Sun; $\oplus$, Earth; ♁ , Mercury; ♀ , Venus; ♂ , Mars; ♃ , Jupiter; ♄ , Saturn; ♅ , Uranus; ♆ , Neptune; ♁ , Ascending Node; ♂ , Descending Node; ☾ , Moon generally.

Explanation of Standard Time Chart

The heavy dotted lines show the arbitrary divisions of time in the United States. The plus and minus marks on either side of the meridian lines show whether it is necessary to add to or subtract from the mean time of points east or west of these lines to arrive at actual standard time. Examples: New York City is 1° east of the 5th meridian, therefore New York local time, less 4 m. gives standard time, and for Boston standard (eastern) time 16 m. must be subtracted from mean time; Ottawa, longitude $75^{\circ} 42'$ equals $42'$ west of 75th meridian—therefore add 3 m. for standard time.

THE PLANETS

Brightest or Best Seen, Invisible, Evening and Morning Stars, etc.

MERCURY (♿) will be brightest January 1-3 and December 5-10 as a morning star, rising near the sunrise point of the horizon about 1 h. 15 m. before the sun; also March 2-7 and November 5-10 as an evening star, setting about 1 h. 15 m. after the Sun and near the sunset point. He will be practically invisible at all other times, being too near the Sun.

VENUS (♀) will be brightest as an evening star March 15-25. Invisible the last of April, being at Inferior Conjunction or between the Earth and Sun April 24. About May 1 she reappears on the other (west) side of the Sun as a morning star, increasing her angular distance from the Sun, until May 30, when she will be brightest again. On July 3d she will attain her greatest distance west of the Sun and from that time on to the end of the year she will gradually diminish in brightness, being very close to the Sun at the end of the year.

MARS (♂) will not attain his greatest degree of brilliancy possible this year, but will be nearly so at its close, being best seen as an all-night star (nearly) the latter part of December. He will be exclusively a morning star until about the first of October, when he will begin to shine in the evening hours also, until at the close of the year he will be seen nearly equally in evening and morning hours.

JUPITER (♃) will be exclusively a morning star until about April 6, when he will begin to shine in the evening hours also, being brightest as an all-night star the latter part of June and early part of July, becoming exclusively an evening star early in October and continuing so to the end of the year, when he will be too near the Sun to be easily seen.

SATURN (♄) will shine in both morning and evening hours at the beginning of the year and until the middle of February, when he will begin to shine only in the evening and will so continue until he becomes invisible in May, being in conjunction with the Sun May 29. After that he will reappear on the other (west) side of the Sun as a morning star. Early in September he will begin to shine in the evening hours also, until early in December, when he will be brightest and an all-night star, rising at sunset, passing the meridian at midnight and setting at sunrise, being exactly opposite the Sun or at "Opposition".

URANUS (♅) will be brightest the last half of July.

NEPTUNE (Ψ) will be brightest in January.

The planet URANUS will be in ♍, and NEPTUNE in ♏ throughout the year.

See table of Rising and Setting of the Principal Planets.

SITUATION OF THE PLANETS AND MOON'S POSITION FOR THE YEAR

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
	D. C.	D. C.	D. C.	D. C.	D. C.	D. C.	D. C.	D. C.	D. C.	D. C.	D. C.	D. C.
Venus.....	5 ♀	2 ♀	2 ♀	6 ♀	4 ♀	1 ♀	6 ♀	3 ♀	8 ♀	7 ♀	2 ♀	7 ♀
Mars.....	12 ♀	9 ♀	9 ♀	13 ♀	11 ♀	8 ♀	13 ♀	10 ♀	14 ♀	12 ♀	9 ♀	14 ♀
Jupiter.....	19 ♀	16 ♀	16 ♀	20 ♀	18 ♀	15 ♀	20 ♀	17 ♀	21 ♀	19 ♀	16 ♀	21 ♀
Saturn.....	26 ♀	23 ♀	23 ♀	27 ♀	26 ♀	22 ♀	27 ♀	24 ♀	28 ♀	26 ♀	23 ♀	28 ♀
☽ Apogee.....	10	7	6	2-30	28	24	22	19	15	12	9	6
☽ Perigee.....	23	20	21	18	15	10	6	3-31	29	27	25	21
☽ Lowest ☽.....	5	1-28	28	24	22	17*	15	11	7	5	1-29	26
☽ Highest ☽.....	19	16	15	11	9	5	2-29	26	22	20	16	13†
☽ at ☽.....	14	10	8	5	2-30	26	23	19	15	12	9	6
☽ at ☽.....	26	23	22	19	16	12	9	5	1-29	26	22	19
☽ on Equator....	12	9	8	4	2-15	11	9	5	1-15	12	9	6
	26	22	22	18	29	25	23	19	29	26	22	20

* Lowest of the year—57° lower than when Full in December

† Highest " " " — 57° higher " " " " June

See full explanation

In previous editions of this Almanac.

IHC ALMANAC & ENCYCLOPEDIA

FIXED AND MOVABLE FEASTS, CHURCH DAYS AND ANNIVERSARIES

New Year's Day.....	Jan.	1	Memorial Day.....	May	30
Epiphany (Twelfth Day).....	"	6	St. Barnebas.....	June	11
Lee's Birthday.....	"	19	First Day of Hebrew Pentecost.....	"	11
Septuagesima Sunday.....	"	19	Nativity of John the Baptist.....	"	24
Conversion of St. Paul.....	"	25	Saints Peter and Paul.....	"	29
Sexagesima Sunday.....	"	26	Independence Day.....	July	4
Purification B. V. M.....	Feb.	2	Hebrew Fast of Tammuz.....	"	22
Quinquagesima Sunday.....	"	2	Mary Magdalen.....	"	22
Shrove Tuesday.....	"	4	St. James.....	"	25
Ash Wednesday (Lent begins).....	"	5	Transfiguration.....	Aug.	6
Quadragesima Sunday (First in Lent).....	"	9	Feast of Assumption B. V. M.....	"	15
Lincoln's Birthday.....	"	12	St. Bartholomew.....	"	24
St. Valentine.....	"	14	Exaltation of Holy Cross.....	Sept.	14
Washington's Birthday.....	"	22	St. Matthew.....	"	21
Mid-Lent Sunday.....	Mar.	2	Michaelmas.....	"	29
Passion Sunday.....	"	9	Hebrew New Year.....	Oct.	1-2
Palm Sunday.....	"	16	Day of Atonement (Yom-Kippour).....	"	11
St. Patrick's Day.....	"	17	First Day of Tabernacles (Heb.).....	"	16
Good Friday.....	"	21	St. Luke.....	"	18
Easter Sunday.....	"	23	Saints Simon and Jude.....	"	28
Annunciation (Lady Day).....	"	25	Hallowe'en.....	"	31
Low Sunday.....	"	30	All Saints' Day.....	Nov.	1
First Day of Jewish Passover.....	April	22	All Souls' Day.....	"	2
St. George.....	"	23	Thanksgiving.....	"	27
St. Mark.....	"	25	St. Andrew.....	"	30
Rogation Sunday.....	"	27	Advent Sunday.....	"	30
Ascension (Holy) Thursday.....	May	1	Feast of Immaculate Conception.....	Dec.	8
Phillip & James.....	"	1	St. Thomas.....	"	21
Pentecost (Whitsunday).....	"	11	Christmas Day.....	"	25
Trinity Sunday.....	"	18	St. Stephen.....	"	26
Corpus Christi.....	"	22	St. John the Evangelist.....	"	27

EMBER DAYS

Wednesday	} after {	First Sunday in Lent.....	February	12, 14 and 15
Friday		Pentecost.....	May	14, 16 and 17
and		September 14.....	September	17, 19 and 20
Saturday		December 13.....	December	17, 19 and 20

THE SEASONS AND THE SUN'S APPARENT PATH THROUGH THE ZODIAC

SUN ENTERS				Eastern Standard Time							
LONG.	SIGN	CON.		D.	H.	M.		D.	H.	M.	
270°	♏	♈	Dec.	21	11	45 P. M.	1912	} Winter begins and lasts... South of the Equator.	89	0	25
300°	♏	♈	Jan.	20	10	18 A. M.	1913				
330°	♏	♈	Feb.	19	0	44 A. M.	"				
0°	♏	♈	Mar.	21	0	18 A. M.	"	} Spring begins and lasts... North of the Equator.	92	19	51
30°	♏	♈	April	20	0	2 P. M.	"				
60°	♏	♈	May	21	11	50 A. M.	"				
90°	♏	♈	June	21	8	9 P. M.	"	} Summer begins and lasts... North of the Equator.	93	14	44
120°	♏	♈	July	23	7	4 A. M.	"				
150°	♏	♈	Aug.	23	1	48 P. M.	"				
180°	♏	♈	Sept.	23	10	53 A. M.	"	} Autumn begins and lasts... South of the Equator.	89	18	42
210°	♏	♈	Oct.	23	7	35 P. M.	"				
240°	♏	♈	Nov.	22	4	36 P. M.	"				
270°	♏	♈	Dec.	22	5	35 A. M.	"	Winter begins, Trop. Yr	365	5	42

D.	H.	M.
89	0	25
89	18	42

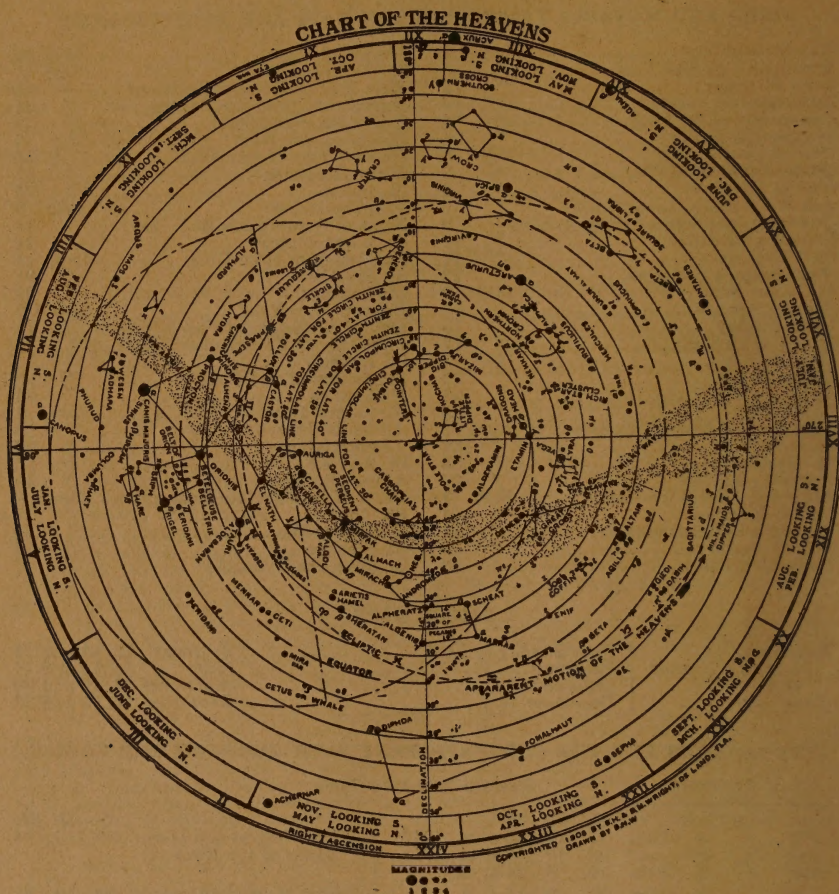
178 19 7 South of the Equator.

D.	H.	M.
92	19	51
93	14	44

Subtract 178 19 7 North of the Equator.

7 15 42 longer north of

the Equator than south of it, owing to the slower motion of the Earth (Sun's apparent motion) when at and near Aphellion.



Explanation

If a bright, uncharted body be seen near the "Ecliptic Circle" it must be a planet. To locate the planets or Moon, refer to the monthly calendar pages in this Almanac, find the proper signs on the chart in the "Ecliptic Circle," and an inspection of that part of the Heavens, comparing with the chart, will serve to identify the planet and all surrounding objects. (Large charts published.)

Because of the Earth's motion, from west to east (opposite to the direction of the arrow in the chart), the stars rise 4 m. earlier each day or 30 m. per week or 2 hrs. a month. The chart shows the position at 9 p. m. Then if the position for any other hour be desired, as for 7 p. m., count back one month, or ahead one month for 11 p. m., and so on for any hour of the night, holding the month desired in front (with name down) as the face looks either to the north or south.

A circle described from the zenith on the "Zenith Circle" for the desired latitude with a radius of 90 degrees (see graduated meridian) will show about what stars are above the horizon. Thus Capella is near the overhead (zenith) point on Lat. 40 degrees N., Jan. 15th, 9 p. m. as will be Algenib in the handle of the "Big Dipper" at 3 a. m. Then from Capella or Algenib all the surrounding visible groups can be identified. The "Pointers" being 5 degrees apart and always in sight may be used as a convenient unit of measure; also when visible the "Belt of Orion" 3 degrees, or the sides of the "Square of Pegasus."

Questions will always be cheerfully answered.

BERLIN H. WRIGHT,

(Enclose stamp or international post card or self-addressed envelope.) De Land, Fla.

Eclipses for 1913

There will be five eclipses this year, three of the Sun and two of the Moon, as follows:

I. Total of the Moon March 22, partially visible in the United States, the Moon setting with the eclipse on in the Eastern States and Canada, visible in standards of time as follows:

	PARTIAL BEGINS	TOTAL BEGINS	MIDDLE Sets	TOTAL ENDS	PARTIAL ENDS
Inter-Colonial.....	6:13 A. M	Moon	.....	With	.....
Eastern.....	5:13 "	6:11 A.M.	.....	the	Eclipse
Central.....	4:13 "	5:11 "	5:58 A.M.	.....	still
Mountain.....	3:13 "	4:11 "	4:58 "	5:44 A.M.	on.
Pacific.....	2:13 "	3:11 "	3:58 "	4:44 "	5:43 A.M.
Alaskan.....	1:12 "	2:11 "	2:58 "	3:44 "	4:43 "
Hawaiian.....	11:42 P.M.*	0:40 "	1:27 "	2:13 "	3:12 "
Philippine Islands.....	Invis.	↑7:11 P.M.	↑7:58 P.M.	↑8:43 P.M.	↑9:43 P.M.

*21st. †23d. Size 18.9 digits or nearly 7 digits. more than total as shown in the cut.

The next recurrence of this eclipse will be April 2, 1931, when it will be total again. See 1912 edition of this Almanac for remarks on the life history of eclipses.

II. Partial of the Sun April 6, on the Northern limb. Visible on the Pacific Coast of the United States as far south as latitude 36°. The eastern boundary line of the area of visibility extends from near Carson City, Nevada, to a point just east of Boise, Idaho, through Chotean, Montana, to Medicine Hat, Assin., Canada east of which line no part of this eclipse will be visible. Greatest size, about 5 digits, in the North Pacific. Visible in North America as follows:

San Francisco.....	8:45 A.M.	9:05 A.M.	0.5 digits
Portland, Oregon }	8:45 "	9:30 "	0.7 "
Salem, Oregon }			
Sitka, Alaska.....	7:50 "	9:15 "	3.0 "
Vancouver, Canada.....	8:40 "	9:50 "	0.9 "

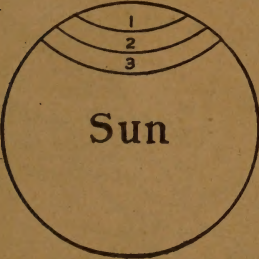
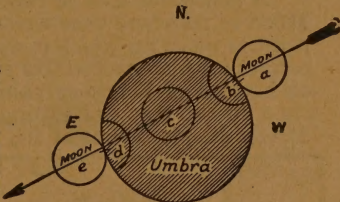


Fig. 2
Partial Eclipse of the Sun
April 6



Eclipse 1
Fig. 1

This eclipse will recur April 17, 1931, when it will be partial also, but larger.

Visible as a very small eclipse in the northern part of the Hawaiian Islands.

III. Partial of the Sun August 31, invisible in the United States; visible in Labrador and Newfoundland.

This eclipse is dying out and on September 11, 1931, will recur, but much smaller and near the north polar region. Its series began at the South Pole and will pass off or close at the North Pole.

IV. Total of the Moon September 15, invisible in eastern United States, the Moon setting as the eclipse begins. Visible in Alaska and Pacific Coast at its beginning and setting more or less eclipsed in the middle and western states. Begins as follows: Central S. T. 4:52 a. m., Mt. S. T. 3:52 a. m. and Pacific S. T. 2:52 a. m.

V. Partial of the Sun September 30, visible in Indian Ocean and south polar region, where this eclipse is beginning its history of something like 1,000 years, recurring next October 10, 1931.

Standard Time

For the convenience of the railroads and business in general, a standard of time was established by mutual agreement in 1883, and by this calculation trains are now run and local time is regulated. By this system the United States, extending from 65° to 125° west longitude, is divided into four time sections, each of 15° of longitude, exactly equivalent to one hour (7½° or 30m.

Standard Time—Continued

on each side of a meridian), commencing with the 75th meridian. The first or eastern section includes all territory between the Atlantic coast and an irregular line drawn from Buffalo to Charleston, S. C., the latter city being its southernmost point. The second or central section includes all the territory between this eastern line and another irregular line extending from Bismarck, N. D., to the mouth of the Rio Grande. The third or mountain section includes all the territory between the last named line and nearly all the western border of Idaho, Nevada, and Arizona. The fourth or Pacific section includes all the territory of the United States between the boundary of the mountain section and the Pacific coast. Inside of each of these sections standard time is uniform, and the time of each section differs from that next to it by exactly one hour.

It is obvious that to express the time of rising and setting of the Sun and Moon in standard time would limit the usefulness of such data to the single point or place for which it was computed, while in mean time it is practically correct for places as widely separated as the width of the continent (see note at bottom of February calendar), and persons having obtained the mean time by the rising or setting of the Sun or Moon, may easily ascertain the correct standard time of any event by making use of the table on Page 9.



IHC ALMANAC & ENCYCLOPEDIA

The 60th, 75th 90th, 105th, and 120th meridians west of Greenwich are the ones from which the various standards are reckoned. Ascertain which is the nearest to the point in question and the difference in longitude, then if the station be west of the meridian add this difference of longitude (4m. = 1°) and if east subtract, as indicated by the signs in the different divisions (see maps).

If the original plan of reckoning from certain hour meridians had been followed the correction could never be over 30 m., whereas it is often more. By reference to the following table and locating the place the correction is desired for (if not named in the table) by means of other places there named, the correction for all points may be readily obtained by approximation.

In the Dominion of Canada, Pacific time is in use from Vancouver to Laggan; mountain time from Laggan to Broadview; central time from Broadview to Fort William; Eastern time from Fort William to Sault Ste. Marie and Detroit to Vanceboro; Atlantic or intercolonial time from Vanceboro eastward. (See table and map.)

Standard Time Table—United States

To obtain standard time, add or subtract the figures given to local time.

City	Standard or Division	Correc'n Minutes	City	Standard or Division	Correc'n Minutes
Albany, N. Y.	Eastern	Sub. 5	Little Rock, Ark.	Central	Add 9
Austin, Texas.	Central	Add 31	Louisville, Ky.	Central	Sub. 13
Baltimore, Md.	Eastern	Add 6	Lynchburg, Va.	Eastern	Add 17
Baton Rouge, La.	Central	Add 40	Memphis, Tenn.	Central	Sub. 0
Bismarck, N. Dak.	Central	Add 43	Milwaukee, Wis.	Central	Sub. 8
Boston, Mass.	Eastern	Sub. 16	Mobile, Ala.	Central	Sub. 8
Buffalo, N. Y.	Eastern	Add 16	Montgomery, Ala.	Central	Sub. 15
Burlington, Iowa.	Central	Add 5	Nashville, Tenn.	Central	Sub. 13
Cairo, Ill.	Central	Sub. 3	New Haven, Conn.	Eastern	Sub. 8
Charleston, S. C.	Eastern	Add 20	New Orleans, La.	Central	Add 0
Chicago, Ill.	Central	Sub. 10	New York, N. Y.	Eastern	Sub. 4
Cincinnati, Ohio.	Central	Sub. 22	Norfolk, Va.	Eastern	Add 5
Cleveland, Ohio.	Central	Sub. 33	Ogdensburg, N. Y.	Eastern	Add 2
Columbia, S. C.	Eastern	Add 24	Omaha, Neb.	Central	Add 24
Columbus, Ohio.	Central	Sub. 28	Pensacola, Fla.	Central	Sub. 11
Dayton, Ohio.	Central	Sub. 23	Philadelphia, Pa.	Eastern	Add 1
Denver, Colo.	Mount'n	Add 0	Pittsburg, Pa.	Eastern	Add 20
Des Moines, Iowa.	Central	Add 14	Portland, Me.	Eastern	Sub. 19
Detroit, Mich.	Central	Sub. 28	Providence, R. I.	Eastern	Sub. 14
Dubuque, Iowa.	Central	Add 3	Quincy, Ill.	Central	Add 6
Duluth, Minn.	Central	Add 9	Raleigh, N. C.	Eastern	Add 15
Erie, Pa.	Central	Sub. 39	Richmond, Va.	Eastern	Add 10
Evansville, Ind.	Central	Sub. 10	Rochester, N. Y.	Eastern	Add 11
Fort Gibson, Okla.	Central	Add 21	Rock Island, Ill.	Central	Add 3
Fort Smith, Ark.	Central	Add 19	San Francisco, Cal.	Pacific	Add 10
Fort Wayne, Ind.	Central	Sub. 20	Santa Fe, N. M.	Mount'n	Add 4
Galena, Ill.	Central	Add 2	Savannah, Ga.	Central	Sub. 36
Galveston, Texas.	Central	Add 19	Shreveport, La.	Central	Add 15
Grand Haven, Mich.	Central	Sub. 15	Springfield, Ill.	Central	Sub. 2
Harrisburg, Pa.	Eastern	Add 7	St. Joseph, Mo.	Central	Add 19
Houston, Tex.	Central	Add 21	St. Louis, Mo.	Central	Add 1
Huntsville, Ala.	Central	Sub. 12	St. Paul, Minn.	Central	Add 12
Indianapolis, Ind.	Central	Sub. 16	Superior City, Wis.	Central	Add 8
Jackson, Miss.	Central	Add 1	Syracuse, N. Y.	Eastern	Add 5
Jacksonville, Fla.	Central	Sub. 33	Toledo, Ohio.	Central	Sub. 26
Janesville, Wis.	Central	Sub. 4	Trenton, N. J.	Eastern	Sub. 1
Jefferson City, Mo.	Central	Add 9	Utica, N. Y.	Eastern	Add 1
Kansas City, Mo.	Central	Add 19	Washington, D. C.	Eastern	Add 8
Keokuk, Iowa.	Central	Add 6	Wheeling, W. Va.	Eastern	Add 23
Knoxville, Tenn.	Central	Sub. 24	Wilmington, Del.	Eastern	Add 2
La Crosse, Wis.	Central	Add 5	Wilmington, N. C.	Eastern	Add 13
Lawrence, Kan.	Central	Add 21	Yankton, S. Dak.	Central	Add 29
Lexington, Ky.	Central	Sub. 23			

IHC ALMANAC & ENCYCLOPEDIA

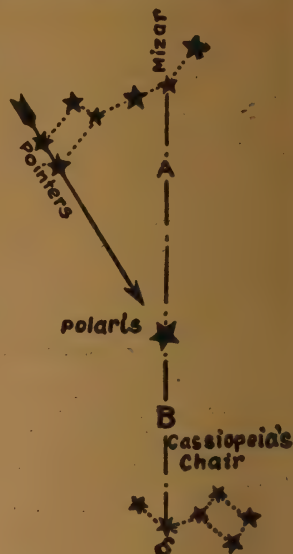
To Obtain Correct Time by the Sun, Moon, Planets or Stars

TABLE I: Begin to watch plumb line for "A" to appear vertically below Polaris;

about	on line
July 20, 5 A. M.	5:30 A. M.
Aug. 20, 3 A. M.	3:28 A. M.
Sept. 20, 1 A. M.	1:26 A. M.
Oct. 20, 11 P. M.	11:24 P. M.
Nov. 20, 9 P. M.	9:22 P. M.
Dec. 20, 7 P. M.	7:24 P. M.

TABLE II: Begin to watch plumb line for "B" to appear vertically below Polaris;

about	on line
Jan. 20, 5 A. M.	5:22 A. M.
Feb. 20, 3 A. M.	3:20 A. M.
March 20, 1 A. M.	1:30 A. M.
April 20, 11 P. M.	11:24 P. M.
May 20, 9 P. M.	9:26 P. M.
June 20, 7 P. M.	7:24 P. M.



DIRECTIONS

When a plumb line matches with "A" or "B" the Pole Star is approaching the meridian and the true local mean time then is the time in column "on line." Interpolate for intermediate days, subtracting 4 min. for each day after or adding 4 min. for each day before any given date.

Example: July 25, begin to watch plumb line about 4:40 a. m., and Polaris will be exactly in line at 5:10 a. m. correct mean local time. To change this into local Standard Time add 4 min. for each degree west of the time meridian and subtract same for stations E. of the meridian. Thus at Yakutat, Alaska, being 5° W. of the 135th Standard Meridian, 20 m. must be added to the observed time for Stan. Time and at Jacksonville, Fla. (8° 15' E. of 90th meridian) 33 min. must be subtracted for Cent. Stan. T.

A light placed back of the head will aid in seeing the plumb lines which may be hung in a convenient window and let the bob hang in a dish of water to prevent the wind from disturbing the line, or the observation may be made with closed window.

If a Noon Mark is desired use two plumb lines and connect them by a row of tacks driven in the porch floor in the range of a pillar, post or window casing that will cast a shadow and apply the "Equation of Time" or "Sun Fast or Slow" or set time piece as directed in "Sun at Noon Mark," or by meridian passage of Moon, planets or stars using an additional perpendicular on the Noon Mark to get the range by.

The above is only applicable between latitudes 30°+ and 60°+ because of the low altitude of pole in the first and high in the last.

Questions relating to the astronomical department of this Almanac will always be answered when stamped and self-directed envelope is sent. Berlin H. Wright, DeLand, Fla.

IHC ALMANAC & ENCYCLOPEDIA

The General Principles of Weather Forecasting in the United States

By

Henry J. Cox, Professor of Meteorology, United States Weather Bureau,
Chicago, Illinois

The general direction of storm movement is easterly, rarely true easterly, but in some easterly direction. Tropical storms are exceptions, as they usually move in a northerly direction, first to northwest, and then curving toward the northeast. In or near the center of a storm the barometer is low and the temperature high, with rain or snow falling, and the wind blows from the fair weather region toward the storm, more or less spirally as the center is reached, and in a direction contrary to the movement of the hands of a clock. So that, if the wind at any given place is blowing from some easterly point, a storm is approaching that place, and, if the wind is blowing from some westerly point, a storm has passed near or through that place, and is now to the eastward. High clouds, or cirrus, move from a storm region toward the region of fair weather, and low clouds, alto-stratus or cumulo-stratus, move from a region where a storm is forming and in the direction of the storm's progress.

For those who have no barometer, the main dependence must be upon the clouds and the wind direction.

1. Clouds flying against the wind indicate the approach of rain or snow.
2. If high clouds, or cirrus, disappear fine weather is indicated, but if they increase and begin to change to lower cirro-stratus or alto-stratus, unsettled weather is indicated.
3. Lower clouds moving at different heights and in opposite directions indicate the approach of heavy rains within a short time, and in hot weather there will be thunderstorms.
4. Cumulus clouds increasing after sunrise until noon and then decreasing toward evening, are an indication of fair weather. If they continue to increase after sunset, look out for rain.
5. Although the sky may be entirely covered with thin, high clouds, there will be little rain or snow if the wind is light.

Evening red and morning gray
Will set the traveler on his way;
But evening gray and morning red
Will bring down rain upon his head.

If the wind sets in from the east to south, a storm is approaching from the west or northwest, and will usually pass near or to the northward of the observer in from twenty-four to thirty-six hours (frequently sooner in winter), and the velocity of the wind and the character of the clouds will usually indicate at least twelve hours in advance whether or not rain or snow may be expected. Steadily falling barometer, a decided rise in temperature, and a marked increase in the humidity also attend the approach of the storm. If the wind sets in from the east to north, a storm is approaching from the south or southwest, and will usually pass the locality of the observer in from twenty-four to thirty-six hours (frequently sooner in winter). In the winter time heavy snows frequently fall over the region to the northward of the storm center, except in the southern states, while to the southward there will be heavy rains with rising temperature. When the wind sets in from the west after a storm, its center has passed to the eastward of the observer, and clearing weather follows shortly with a cold wave in winter and a sharp fall in temperature in other seasons, and at times with frosts in the spring and autumn.

Storm movements are most pronounced from November to April, inclusive. During May and October they are usually less severe unless of a tropical character. From June to September, inclusive, the summer type of weather prevails, when the greater portion of the precipitation occurs in the form of local thunderstorms due to heat. The topography of the country

IHC ALMANAC & ENCYCLOPEDIA

also exercises an important effect, and in many localities causes a modification of the rules before stated. For instance, over the region between the Rocky Mountains and the Missouri River precipitation seldom begins until the barometer begins to rise, the temperature to fall, and the winds to change to southwest and west, and the rain or snow from any one storm is usually not of long duration, and not heavy in amount. East of the Missouri River, however, the rain or snow sets in while the wind is in the east, and when it changes to southwest and west with the barometer rising and the temperature falling, clearing weather will soon set in. The amount of rain and snow is also much greater east of the Missouri River than to the westward, as the east and southeast winds in front of the storm bring up warm and moisture-laden air from the Atlantic Ocean and the Gulf of Mexico, and carry it into the interior until the moisture is condensed by contact with cooler currents. Consequently, by the time the air has passed west of the Missouri River, it has lost the greater portion of its moisture, and not much is left, comparatively speaking, for the great states of the plains. Neither can they draw a supply of moisture from the Pacific Ocean through the medium of the west winds as the latter are well-drained of their moisture in ascending the westward slope of the Rocky Mountains, and are dry when they descend the eastern slope. The same contrast occurs between the precipitation of the Pacific coast states and the plateau region immediately to the eastward. However, exceptions to this general rule are noted in the summer time when local thunderstorms are likely to occur in the plains states and the western plateau during a heated period, the showers usually terminating the hot weather for a short time. Another local peculiarity is the occurrence of rain and snow along the eastern slope of the Rocky Mountains when the winds blow from the north and northeast. These rains and snows occur when the barometer is low over New Mexico and Arizona, and high over Montana and the Dakotas. The rains or snows follow almost invariably.

The weather in the Pacific states constitutes another local type. There are two well-defined seasons, a wet one from November to April, inclusive, and a dry one from May to October, inclusive. During the wet season there is a constant succession of low barometer areas moving eastward between the latitude of Sitka, Alaska and Oregon and rains are very frequent. From May to October, inclusive, these low areas are farther to the northward, and rains are comparatively rare.

Frost is likely to occur on cool, clear nights when the air temperature on the previous day, after the passing of a storm, or rain period, has not been much above fifty degrees, with light winds from west to north. Radiation, or loss of heat, from plants takes place very rapidly under these conditions, the temperature at the plant level falls to or below the freezing point, and frost forms. Clouds act as a blanket, greatly reducing the radiation, or loss of heat, and thereby prevent frost formation. The character of the vegetation as well as that of the soil, has some effect upon the formation of frost, notably in lowlands and moorlands, and temperatures as high as sixty-five degrees may be followed by severe frosts on the following morning.

Farmers should, if possible, be provided with a barometer and a thermometer of good make, especially the former, always remembering that a falling barometer indicates the approach of unsettled weather, and a rising barometer the approach or continuation of fair weather. The barometer at a normal height indicates little or no change in weather conditions during the succeeding twenty-four hours.

It is impossible to forecast the occurrence of tornadoes that occur during the spring and summer, and to indicate the localities where they will occur. They usually occur to the southeastward of a storm center, not a great distance away.

IHC ALMANAC & ENCYCLOPEDIA

Domestic Postage

First Class Matter (Letters, etc.)	2 cents an ounce
Postal Cards and Private Mailing Cards	1 cent each
Double Postal Cards	2 cents each
Second Class (Newspapers, Periodicals)	1 cent for 4 ounces
Third Class (Books, Circulars)	1 cent for 2 ounces
Fourth Class (Merchandise)	1 cent an ounce
Registration Fee (in addition to postage)	10 cents
Special Delivery Stamp (addition to postage)	10 cents

First Class Matter—Letters and all other written matter (whether sealed or not), excepting manuscript copy accompanying proof-sheets, also all matter sealed (see below), two cents an ounce, excepting drop letters at non-carrier offices, the patrons of which cannot be served by rural carrier, one cent an ounce. Postal cards, one cent each. Post cards (private mailing cards), one cent each.

Second Class—Newspapers and periodicals, published quarterly and oftener, bearing notice of entry as second-class matter, the general public pay by affixing stamps at the rate of one cent for each four ounces or part thereof when not sealed.

Third Class—Books (printed, not blank), circulars, other printed matter, proof sheets and manuscript copy accompanying the same, valentines, sheet music, photographs, heliotypes, chromos, posters, lithographs and printed advertising matter on paper only—all, when not sealed, one cent for two ounces or fraction. Limit of weight, four pounds.

Fourth Class—See new parcels post law below.

Sealing—Any matter is regarded as sealed when it is not so wrapped as to allow of a thorough examination without in any way injuring the wrapping.

Registration—Any class of mailable matter may be registered at any post-office or station thereof, and by any rural carrier. In residential districts of cities, letters and packages of first-class matter that are not cumbersome on account of size, shape, or weight can be registered by city carriers at the house door. The registration fee is 10 cents for each piece in addition to postage. Indemnity for value up to \$50 is paid for the loss of sealed domestic matter prepaid at the letter rate of postage; and for value up to 50 francs (or its equivalent in United States money) for loss of registered articles addressed to foreign countries embraced in the Universal Postal Union.

Postage to Porto Rico, Philippines, Guam, Hawaii, Canal Zone—Same as given above.

Parcels Post (Domestic) Rates of Postage

In Effect January 1, 1913

Sec. 8. That hereafter fourth class mail matter shall embrace all other matter, including farm and factory products, not now embraced by law in either the first, second or third class, not exceeding eleven pounds in weight, nor greater in size than seventy-two inches in length and girth combined, nor in form or kind likely to injure the person of any postal employee or damage the mail equipment or other mail matter and not of a character perishable within a period reasonably required for transportation and delivery.

	First Pound	Each Additional Pound	for 11 Pounds
Rural Route and City Delivery	\$0.05	\$0.01	\$0.15
50 Mile Zone	.05	.03	.35
150 Mile Zone	.06	.04	.46
300 Mile Zone	.07	.05	.57
600 Mile Zone	.08	.06	.68
1,000 Mile Zone	.09	.07	.79
1,400 Mile Zone	.10	.09	1.00
1,800 Mile Zone	.11	.10	1.11
Over 1,800 Miles	.12	.12	1.32

Foreign Postage

The rates in the case of all foreign countries (except Canada, Cuba, Panama, and Mexico) are as follows: Letters, first ounce or less, 5 cents; each additional ounce or fraction, 3 cents; postal cards, 2 cents; newspapers and printed matter, per 2 ounces, 1 cent; samples of merchandise, first 4 ounces or less, 2 cents; each additional ounce or fraction, 1 cent (limit of weight, 12 ounces). Registration fee, 10 cents.

Letters for England, Ireland, Scotland, Wales, and Newfoundland, per ounce, 2 cents, and letters for Germany by steamers sailing for Germany direct, per ounce, 2 cents.

Mail matter of all kinds addressed for delivery in Canada, Cuba, Panama, and Mexico is admitted to the mails at domestic postage rates and conditions, except commercial papers and bona fide trade samples, which are admitted at a rate of two ounces for one cent, if not weighing over twelve ounces. Seeds, bulbs, scions, and plants for Canada must be prepaid at the rate of one cent per ounce or fraction of an ounce; and packages of salable merchandise for Mexico must be sent by parcels post.

Foreign Money and Its Value in U. S. Money

English Money—Four farthings = one penny (d.); twelve pence = one shilling (s.); 20 shillings = one pound (£). U. S. equivalents: 1 farthing = $\frac{1}{2}$ cent; 1 penny = 2 cents; 1 shilling = 24 $\frac{1}{2}$ cents; 1 £ = \$4.8665.

French Money—Ten centimes = one decime; ten decimes = one franc. U. S. equivalents: 1 centime = $\frac{1}{5}$ cent; 1 decime = 19 $\frac{1}{10}$ cents; 1 franc = 193 $\frac{1}{10}$ cents.

German Money—One hundred pfennig = 1 mark. U. S. equivalents: 1 pfennig = $\frac{1}{4}$ cent; 1 mark = 234 $\frac{1}{5}$ cents.

Russian Money—One hundred copecks = one ruble. U. S. equivalents: 1 copeck = $\frac{1}{2}$ cent; 1 ruble = 51 $\frac{1}{2}$ cents.



Moon's Phases				Intercol. T.				Eastern T.				Central T.				Mountain T.				Pacific T.				
				D.	H.			M.	H.			M.	H.			M.	H.			M.	H.			M.
☾ New Moon				7	6			28	5			28	4			28	3			28	2			28
☾ First Quarter				15	0			2	11			2	10			2	9			2	8			2
☾ Full Moon				22	11			40	10			40	9			40	8			40	7			40
☾ Last Quarter				29	3			34	2			34	1			34	0			34	11			34*

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon.	Moon's Pl.	UNITED STATES												28th								
				Northern States						Southern States						JANUARY—1913								
				Sun Rises	Sun Sets	Moon R.	Moon S.	Moon R. & S.	Sun Rises	Sun Sets	Moon R.	Moon S.	Moon R. & S.											
				H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.					
1	W	☾	☾	7 25 4	43 1	46 7	35 6	1 34													SUN			
2	Th	☾	☾	7 25 4	44 3	17 35	7 2 50													1st	18h47m	23° 1'	3.6	
3	Fr	☾	☾	7 25 4	45 4	67 35	7 3 44													11th	19h30m	21°50'	8.1	
4	Sat	☾	☾	7 25 4	46 5	147 45	8 4 48													21st	20h30m	19°56'	11.5	
5	Sun	☾	☾	7 25 4	47 6	187 45	9 5 49													31st	20h55m	17°25'	13.6	
6	M	☾	☾	7 25 4	48 7	137 45	10 6 44													Day	Right Ascension	Declin.		
7	Tu	☾	☾	7 25 4	49 sets	7 45 11	sets													MERCURY				
8	W	☾	☾	7 24 4	50 5	597 45	11 6 22													As a Morning Star				
9	Th	☾	☾	7 24 4	51 7	57 45	12 7 22													1st	17h17m	21°50'—		
10	Fr	☾	☾	7 24 4	52 8	67 35	13 8 19													3d	17h28m	22°17'—		
11	Sat	☾	☾	7 24 4	53 9	77 35	14 9 14													5th	17h39m	21°42'—		
12	Sun	☾	☾	7 23 4	54 10	67 35	15 10 9													VENUS				
13	M	☾	☾	7 23 4	55 11	67 35	16 11 4													As an Evening Star				
14	Tu	☾	☾	7 23 4	56 morn	7 35 17	12 0													1st	21h46m	15°16'—		
15	W	☾	☾	7 22 4	57 8	35 18	morn													11th	22h31m	10°44'—		
16	Th	☾	☾	7 22 4	59 1	127 25	19 59													21st	23h12m	5°49'—		
17	Fr	☾	☾	7 21 5	0 2	187 25	20 2 0													MARS				
18	Sat	☾	☾	7 21 5	1 3	277 25	21 3 4													As a Morning Star				
19	Sun	☾	☾	7 21 5	2 4	397 15	21 4 11													1st	17h31m	23°44'—		
20	M	☾	☾	7 20 5	3 5	497 15	22 5 19													21st	18h36m	23°51'—		
21	Tu	☾	☾	7 19 5	4 6	507 15	23 6 22													JUPITER				
22	W	☾	☾	7 18 5	5 rises	7 05 24	rises													As a Morning Star				
23	Th	☾	☾	7 17 5	7 6	357 05	25 6 50													1st	17h59m	23°13'—		
24	Fr	☾	☾	7 17 5	8 7	556 59	26 8 4													SATURN				
25	Sat	☾	☾	7 16 5	9 9	106 59	27 9 14													As an Evening Star				
26	Sun	☾	☾	7 16 5	10 10	256 58	28 10 21													1st	3h44m	17°38'+		
27	M	☾	☾	7 15 5	11 11	356 58	29 11 26													URANUS				
28	Tu	☾	☾	7 14 5	13 morn	6 57 30	morn													As an Evening Star				
29	W	☾	☾	7 13 5	14 4	76 56	31 32													1st	20h18m	20°13'—		
30	Th	☾	☾	7 12 5	15 1	576 56	32 1 36													NEPTUNE				
31	Fr	☾	☾	7 12 5	16 3	66 56	33 2 41													As an All Night Star				
																				1st	7h47m	20°38'+		

The World's Calendar for Wheat Harvests

Every month in the year the world has a wheat harvest somewhere.
 During January they are harvesting in New Zealand and the Argentine Republic.

IHC ALMANAC & ENCYCLOPEDIA

Fees for Money Orders payable in the United States (which includes Guam, Hawaii, Porto Rico and Tutuila, Samoa); or payable in the Canal Zone (Isthmus of Panama), the Philippines, Bermuda, British Guiana, British Honduras, Canada, Cuba, Mexico, Newfoundland, at the United States postal agency at Shanghai (China), and in certain islands in the West Indies.

Not over \$2.50.....	3 cents	Over \$30 to \$ 40.....	15 cents
Over \$2.50 to \$5.....	5 cents	Over \$40 to \$ 50.....	18 cents
Over \$5 to \$10.....	8 cents	Over \$50 to \$ 60.....	20 cents
Over \$10 to \$20.....	10 cents	Over \$60 to \$ 75.....	25 cents
Over \$20 to \$30.....	12 cents	Over \$75 to \$100.....	30 cents

Fees for Foreign Money Order when Payable in Apia, Austria, Belgium, Bolivia, Cape Colony, Costa Rica, Denmark, Egypt, Germany, Great Britain and Ireland, Honduras, Hongkong, Hungary, Italy, Japan, Liberia, Luxemburg, Natal and Zululand, New South Wales, New Zealand, Orange River Colony, Peru, Portugal, Queensland, Russia, Salvador, South Australia, Switzerland, Tasmania, the Transvaal, Uruguay and Victoria.

From \$ 0.01 to \$ 2.50.....	10 cents	From \$30.01 to \$ 40.00.....	45 cents
From \$ 2.51 to \$ 5.00.....	15 cents	From \$40.01 to \$ 50.00.....	50 cents
From \$ 5.01 to \$ 7.50.....	20 cents	From \$50.01 to \$ 60.00.....	60 cents
From \$ 7.51 to \$10.00.....	25 cents	From \$60.01 to \$ 70.00.....	70 cents
From \$10.01 to \$15.00.....	30 cents	From \$70.01 to \$ 80.00.....	80 cents
From \$15.01 to \$20.00.....	35 cents	From \$80.01 to \$ 90.00.....	90 cents
From \$20.01 to \$30.00.....	40 cents	From \$90.01 to \$100.00.....	\$1.00

When payable in any foreign country not enumerated in Tables Nos. 1 and 2 above:

From \$ 0.01 to \$10.00.....	10 cents	From \$50.01 to \$ 60.00.....	60 cents
From \$10.01 to \$20.00.....	20 cents	From \$60.01 to \$ 70.00.....	70 cents
From \$20.01 to \$30.00.....	30 cents	From \$70.01 to \$ 80.00.....	80 cents
From \$30.01 to \$40.00.....	40 cents	From \$80.01 to \$ 90.00.....	90 cents
From \$40.01 to \$50.00.....	50 cents	From \$90.01 to \$100.00.....	\$1.00

Parcels Post Mails (Foreign)

Admissible Matter—Packages of mailable merchandise may be sent, in unsealed packages by "Parcels Post" to the following named countries: Australia, Austria, Bahamas, Barbados, Belgium, Bermuda, Bolivia: Bahia, Para, Pernambuco, Rio de Janeiro, Sao Paulo, in Brazil; British Guiana, Chile, Colombia, Costa Rica, Denmark, Ecuador, France, Germany, Great Britain, Guatemala, Honduras (British), Honduras (Republic of), Hongkong, Italy, Jamaica, Japan, Leeward Islands, Mexico, New Zealand, Newfoundland, Nicaragua, Norway, Peru, Sweden, Salvador, The Danish West Indies, The Netherlands, Trinidad (including Tobago), Uruguay, Venezuela, Windward Islands, Dutch Guiana.

Postage Rates—Postage must be prepaid in full by stamps affixed at the rate of 12 cents a pound or fraction of a pound. Registry fee 10 cents in addition to postage.

Registration—The sender of a parcel addressed to any of the countries named in the table at the head of this section, except Barbados, France, Great Britain, The Netherlands, Uruguay, and Dutch Guiana, may have the same registered by paying a registry fee of 10 cents, and will receive the "Return Receipt" without special charge therefor, when envelope or wrapper is marked "Return Receipt Demanded."

Place of Mailing—Matter intended for Parcels Post must not be posted in a letter box but must be taken to the postoffice and presented to the postmaster, or person in charge, for inspection.

Letters Prohibited—A letter or communication of the nature of personal correspondence must not accompany, be written on, or inclosed with, any parcel.

Transmitting Money Through the Banks

Transmitting Money Through the Banks—As a means of sending money to distant points, bank drafts are safe, convenient and economical.

Bank drafts are absolutely safe. If lost in the mail the bank will issue a duplicate at no additional expense; if paid to the wrong party, the bank so paying is responsible for the amount.

It is convenient to use this form of transmitting money. Simply go to the bank, tell the amount for which you wish the draft written, and name of the person or firm to whom it is to be sent. It is not necessary to register a draft in sending it through the mails, as it cannot be cashed by any one except the person to whom issued.

Bank drafts are the cheapest method of sending money, except of course paying by check. Drafts up to \$20.00 cost 5 cents, and for larger amounts the rate is in proportion.



ARTIST T. WILLIAMSON.

Moon's Phases		Intercol. T.			Eastern T.			Central T.			Mountain T.			Pacific T.		
	D.	H.	M.		H.	M.		H.	M.		H.	M.		H.	M.	
☾ New Moon	6	1	22		0	22		11	22*		10	22*		9	22*	
☾ First Quarter	14	4	34		3	34		2	34		1	34		0	34	
☾ Full Moon	20	10	3		9	3		8	3		7	3		6	3	
☾ Last Quarter	27	5	15		4	15		3	15		2	15		1	15	

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES												*5th			
				Northern States						Southern States						FEBRUARY—1913			
				Sun Rises	Sun Sets	Moon R. & S.	Moon H.	Sun Rises	Sun Sets	Moon R. & S.	Moon H.	Right Day	Declination	Slow Min.					
M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.							
1	Sat	☾	☾	7	11	5	18	4	12	6	54	5	34	3	44	1st	20h59m	17° 8'	13.7
2	Sun	☾	☾	7	10	5	19	5	10	6	54	5	35	4	40	11th	21h39m	14° 3'	14.4
3	M	☾	☾	7	9	5	20	6	0	6	53	5	36	5	31	21st	22h18m	10° 36'	13.8
4	Tu	☾	☾	7	7	5	21	6	40	6	52	5	37	6	14	VENUS			
5	W	☾	☾	7	6	5	22	7	11	6	51	5	38	6	50	As an Evening Star			
6	Th	☾	☾	7	5	5	23	sets		6	51	5	38	sets		1st	23h54m	0° 23'	—
7	Fr	☾	☾	7	4	5	25	6	59	6	50	5	39	7	9	11th	0h31m	4° 40'	+
8	Sat	☾	☾	7	3	5	26	7	59	6	49	5	40	8	4	21st	1h 5m	9° 28'	+
9	Sun	☾	☾	7	2	5	27	8	59	6	48	5	41	8	53	MARS			
10	M	☾	☾	7	1	5	28	10	0	6	47	5	42	9	54	As a Morning Star			
11	Tu	☾	☾	7	0	5	30	10	59	6	46	5	43	10	48	1st	19h12m	23° 12'	—
12	W	☾	☾	7	6	58	31	morn		6	45	5	44	11	49	11th	19h44m	22° 10'	—
13	Th	☾	☾	7	6	57	32		56	44	5	45	morr		21st	20h16m	20° 44'	—	
14	Fr	☾	☾	7	6	56	34	1	12	6	43	5	46		51	JUPITER			
15	Sat	☾	☾	7	6	55	35	2	21	6	42	5	46	1	55	As a Morning Star			
16	Sun	☾	☾	7	6	53	36	3	29	6	41	5	47	2	59	1st	18h28m	23° 7'	—
17	M	☾	☾	7	6	52	37	4	32	6	40	5	48	4	2	21st	18h45m	22° 53'	—
18	Tu	☾	☾	7	6	51	39	5	26	6	39	5	49	4	59	SATURN			
19	W	☾	☾	7	6	49	40	6	12	6	38	5	50	5	50	As an Evening Star			
20	Th	☾	☾	7	6	48	41	rises		6	37	5	51	rises		1st	3h41m	17° 37'	+
21	Fr	☾	☾	7	6	46	43	6	42	6	36	5	52	6	48	URANUS			
22	Sat	☾	☾	7	6	45	44	8	0	6	36	5	52	7	59	As a Morning Star			
23	Sun	☾	☾	7	6	44	45	9	16	6	35	5	53	9	9	1st	20h26m	19° 47'	—
24	M	☾	☾	7	6	42	46	10	28	6	34	5	54	10	15	NEPTUNE			
25	Tu	☾	☾	7	6	41	48	11	44	6	33	5	55	11	25	As an Evening Star			
26	W	☾	☾	7	6	39	49	morn		6	32	5	56	morn		1st	7h43m	20° 48'	+
27	Th	☾	☾	7	6	38	50		56	6	31	5	57	32		As an Evening Star			
28	Fr	☾	☾	7	6	37	51	2	4	6	30	5	57	1	36	1st	7h43m	20° 48'	+

The World's Calendar for Wheat Harvests

During the latter part of February the harvest is on in East India, Upper Egypt and Chili.

In upper Egypt the camel is used as a draft animal. In Chili the pony and oxen draw the harvesters. In East India the reaping hook is still used.

IHC ALMANAC & ENCYCLOPEDIA

What Uncle Sam Is Doing for the Farmers

The object of the Department of Agriculture is to improve agricultural conditions. For this department, the Government has appropriated \$17,233,452 for 1913. This valuable service is absolutely free to farmers.

The department is divided into a number of bureaus which have charge of various branches of the work.

The Bureau of Animal Industry has charge of the work of the department relating to the live stock industry.

The Bureau of Plant Industry studies plant life in all its relations to agriculture. The Forest Service has charge of all investigations in forestry, and gives practical assistance to tree planters.

The Bureau of Chemistry investigates methods proposed for the analysis of plants, fertilizers, and agricultural products, and makes such analyses as pertain in general to the interests of agriculture.

The Bureau of Soils is intrusted with the investigation of surveying and mapping of soils, the investigation of the cause and prevention of the rise of alkali in soils, and the drainage of soils.

The Bureau of Entomology obtains and disseminates information regarding injurious insects affecting field crops, fruits, small fruits, truck crops, forests and forest products, stored products, etc.

The Bureau of Biological Survey studies the geographic distribution of animals and plants, maps the natural life zones of the country, etc.

The Bureau of Statistics collects information as to the condition, production, etc., of the principal crops, and the status of farm animals; investigates land tenures, cost of producing farm products, country life education, transportation, and other lines of rural economics, issuing bulletins on these subjects.

In addition to the above bureaus, there is a Division of Accounts and Disbursements Division of Publications, a Librarian, Office of Experiment Stations, and Office of Public Roads.

Agricultural Experiment Stations

If you desire to write the experiment station in your state, address: Agricultural Experiment Station, adding the name of the nearest city or town listed for your state.

Alabama.....Auburn, Uniontown
and Tuskegee Insti-
tute.
Alaska.....Sitka
Arizona.....Tucson
Arkansas.....Fayetteville
California.....Berkeley
Colorado.....Fort Collins
Connecticut.....New Haven and Storrs
Delaware.....Newark
Florida.....Gainesville
Georgia.....Experiment
Guam.....Island of Guam
Hawaii.....Honolulu
Idaho.....Moscow
Illinois.....Urbana
Indiana.....Lafayette
Iowa.....Ames
Kansas.....Manhattan
Kentucky.....Lexington
Louisiana.....Baton Rouge and Au-
dubon Park, New Or-
leans
Maine.....Orono
Maryland.....College Park
Massachusetts.....Amherst
Michigan.....East Lansing
Minnesota.....University Farm, St.
Paul
Mississippi.....Agricultural College,
Columbia

Missouri.....Mountain Grove
Montana.....Bozeman
Nebraska.....Lincoln
Nevada.....Reno
New Hampshire.....Durham
New Jersey.....New Brunswick
New Mexico.....Agricultural College
New York.....Geneva and Ithaca
North Carolina.....West Raleigh and
Raleigh
North Dakota.....Agricultural College
Ohio.....Wooster
Oklahoma.....Stillwater
Oregon.....Corvallis
Pennsylvania.....State College
Porto Rico.....Mayaguez and Rio
Piedras
Rhode Island.....Kingston
South Carolina.....Clemson College
South Dakota.....Brookings
Tennessee.....Knoxville
Texas.....College Station
Utah.....Logan
Vermont.....Burlington
Virginia.....Blacksburg and
Norfolk
Washington.....Pullman
West Virginia.....Morgantown
Wisconsin.....Madison
Wyoming.....Laramie



Moon's Phases		Intercol. T.			Eastern T.			Central T.			Mountain T.			Pacific T.		
	D.	H.	M.		H.	M.		H.	M.		H.	M.		H.	M.	
New Moon	7	8	23		7	23		6	23		5	23		4	23	
First Quarter	15	4	58		3	58		2	58		1	58		0	58	
Full Moon	22	7	56		6	56		5	56		4	56		3	56	
Last Quarter	28	8	58		7	58		6	58		5	58		4	58	

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon.	Moon's Pl.	UNITED STATES												MARCH—1913			
				Northern States						Southern States						Day	Right Ascension	Slow Declination	
				Sun Rises		Sun Sets		Moon R. & S.		Sun Rises		Sun Sets		Moon R. & S.					
				H.	M. H.	M.	H.	M.	H.	M. H.	M.	H.	M. H.	M.	H.				M.
1	Sat	☾	♌	6	35	5	53	3	56	28	5	58	2	35	1st	22h48m	7°37'—	12.5	
2	Sun	☾	♌	6	34	5	53	3	57	6	27	5	58	3	28	11th	23h25m	3°45'—	10.
3	M	☾	♌	6	32	5	54	4	40	6	26	5	59	4	13	21st	0h 2m	0°12'+	7.4
4	Tu	☾	♌	6	30	5	55	5	14	6	25	6	0	4	45	31st	0h38m	4° 7'+	4.3
5	W	☾	♌	6	29	5	56	5	41	6	24	6	1	5	23	Day	Right Ascension	Declin.	
6	Th	☾	♌	6	27	5	57	6	6	6	23	6	1	5	52	MERCURY			
7	Fr	☾	♌	6	25	5	58	sets	6	22	6	2	sets		As an Evening Star				
8	Sat	☾	♌	6	24	5	59	6	59	6	21	6	3	6	58	2nd	23h45m	1°40'—	
9	Sun	☾	♌	6	22	6	0	7	51	6	20	6	3	7	47	7th	0h12m	2°34'+	
10	M	☾	♌	6	20	6	1	8	50	6	19	6	4	8	41	VENUS			
11	Tu	☾	♌	6	19	6	2	9	57	6	17	6	5	9	42	As an Evening Star			
12	W	☾	♌	6	17	6	3	11	26	6	16	6	10	42	1st	1h31m	13° 1'+		
13	Th	☾	♌	6	16	6	4	morn	6	14	6	6	11	44	11th	1h59m	16°54'+		
14	Fr	☾	♌	6	14	6	5		9	6	13	7	morn		21st	2h20m	19°57'+		
15	Sat	☾	♌	6	12	6	6	1	18	6	11	8		50	MARS				
16	Sun	☾	♌	6	11	6	8	2	21	6	10	9	1	51	As a Morning Star				
17	M	☾	♌	6	9	6	9	3	19	6	9	9	2	50	1st	20h42m	19°19'—		
18	Tu	☾	♌	6	7	6	10	4	4	6	8	10	3	39	11th	21h13m	17°15'—		
19	W	☾	♌	6	6	6	11	4	44	6	6	11	4	25	21st	21h44m	14°53'—		
20	Th	☾	♌	6	4	6	12	5	14	6	5	11	5	1	JUPITER				
21	Fr	☾	♌	6	2	6	13	5	43	6	3	12	5	37	As a Morning Star				
22	Sat	☾	♌	6	1	6	14	rises	6	2	6	13	rises		1st	18h51m	22°47'—		
23	Sun	☾	♌	5	59	6	15	8	46	6	16	14	7	54	21st	19h 4m	22°31'—		
24	M	☾	♌	5	58	6	16	9	20	5	59	6	14	9	4	SATURN			
25	Tu	☾	♌	5	56	6	17	10	36	5	58	6	15	10	14	As an Evening Star			
26	W	☾	♌	5	54	6	18	11	48	5	57	6	16	11	22	1st	3h45m	17°57'+	
27	Th	☾	♌	5	52	6	19	morn	5	56	6	16	morn		URANUS				
28	Fr	☾	♌	5	51	6	20		55	5	55	6	17	26	As a Morning Star				
29	Sat	☾	♌	5	49	6	21	1	52	5	54	6	18	1	22	1st	20h32m	17°25'—	
30	Sun	☾	♌	5	47	6	22	2	39	5	52	6	18	2	11	NEPTUNE			
31	M	☾	♌	5	45	6	23	3	17	5	50	6	19	2	52	As an Evening Star			
															1st	3h41m	20°55'+		

The World's Calendar for Wheat Harvests

March witnesses a continuation of the harvest begun during February in East India, Upper Egypt and Chili.

IHC ALMANAC & ENCYCLOPEDIA

Farmers' Bulletins

Bulletins in this list will be sent free, so long as the supply lasts, to any resident of the United States, on application to his Senator, Representative, or Delegate in Congress, or to the Secretary of Agriculture, Washington D. C. Because of the limited supply, applicants are urged to select only a few numbers, choosing those which are of special interest to them. Residents of foreign countries should apply to the Superintendent of Documents, Government Printing Office, Washington, D. C., who has these bulletins for sale. Price 5 cents each to Canada, Cuba, and Mexico; 6 cents to other foreign countries. The bulletins entitled "Experiment Station Work" give briefly the results of experiments performed by the State experiment stations.

22. The Feeding of Farm Animals
27. Flax for Seed and Fiber
28. Weeds; And How to Kill Them
32. Silos and Silage
34. Meats: Composition and Cooking
35. Potato Culture
36. Cotton Seed and Its Products
43. The Manuring of Cotton
49. Sheep Feeding
51. Standard Varieties of Chickens
52. The Sugar Beet
54. Some Common Birds
55. The Dairy Herd
61. Asparagus Culture
62. Marketing Farm Produce
64. Ducks and Geese
77. The Liming of Soils
81. Corn Culture in the South
83. Alkali Lands
91. Potato Diseases and Treatment
93. Sugar as Food
99. Insect Enemies of Shade Trees
101. Millets
106. Breeds of Dairy Cattle
113. The Apple and How to Grow It
121. Beans, Peas, and Other Legumes as Food
126. Practical Suggestions for Farm Buildings
128. Eggs and Their Uses as Food
131. Household Tests for Detection of Oleomargarine and Renovated Butter
134. Tree Planting on Rural School Grounds
137. The Angora Goat
138. Irrigation in Field and Garden
139. Emmer: A Grain for the Semi-arid Regions
150. Clearing New Land
152. Scabies of Cattle
154. The Home Fruit Garden: Preparation and Care
156. The Home Vineyard
157. The Propagation of Plants
158. How to Build Small Irrigation Ditches
164. Rape as a Forage Crop
166. Cheese Making on the Farm
170. Principles of Horse Feeding
172. Scale Insects and Mites on Citrus Trees
173. Primer of Forestry. Part I: The Forest
174. Broom Corn
175. Home Manufacture and Use of Unfermented Grape Juice
176. Cranberry Culture
177. Squab Raising
179. Horseshoeing
181. Pruning
182. Poultry as Food
183. Meat on the Farm: Butchering, Curing and Keeping
185. Beautifying the Home Grounds
187. Drainage of Farm Lands
192. Barnyard Manure
194. Alfalfa Seed
195. Annual Flowering Plants
196. Usefulness of the American Toad
197. Importation of Game Birds and Eggs for Propagation
198. Strawberries
200. Turkeys
201. Cream Separator on Western Farms
203. Canned Fruits, Preserves and Jellies
204. The Cultivation of Mushrooms
205. Pig Management
206. Milk Fever and Its Treatment
209. Controlling the Boll Weevil in Cotton Seed and at Gineries
213. Raspberries
218. The School Garden
219. Lessons from the Grain Rust Epidemic of 1904
220. Tomatoes
221. Fungus Diseases of the Cranberry
224. Canadian Field Peas
229. The Production of Good Seed Corn
231. Spraying for Cucumber and Melon Diseases
234. The Guinea Fowl
235. Preparation of Cement Concrete
238. Citrus Fruit Growing in the Gulf States
239. The Corrosion of Fence Wire
241. Butter Making on the Farm
242. An Example of Model Farming
243. Fungicides and Their Use in Preventing Diseases of Fruits
245. Renovation of Worn-Out Soils
246. Saccharine Sorghums for Forage
250. The Prevention of Stinking Smut of Wheat and Loose Smut of Oats
253. The Germination of Seed Corn
254. Cucumbers
255. The Home Vegetable Garden
256. Preparation of Vegetables for the Table
258. Texas or Tick Fever and its Prevention
260. Seed of Red Clover and Its Impurities
263. Practical Information for Beginners in Irrigation
266. Management of Soils to Conserve Moisture
270. Modern Conveniences for the Farm Home
272. A Successful Hog and Seed-Corn Farm
274. Flax Culture
275. The Gypsy Moth and How to Control It
277. The Use of Alcohol and Gasoline in Farm Engines
278. Leguminous Crops for Green Manuring
279. A Method of Eradicating Johnson Grass
280. A Profitable Tenant Dairy Farm
282. Celery



Moon's Phases	D.	Intercol. T.		Eastern T.		Central T.		Mountain T.		Pacific T.	
		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
New Moon	6	1	48	0	48	11	48	10	48	9	48
First Quarter	14	1	39	0	39	11	39*	10	39*	9	39*
Full Moon	20	5	33	4	33	3	33	2	33	1	33
Last Quarter	28	2	9	1	9	0	9	11	9	10	9

UNITED STATES												*13th							
Day o Mo.	Day of Wk.	Lt. and Dk. of Moon.	Moon's Pl.	Northern States						Southern States						Day	Right		Slow Min.
				Sun Rises		Sun Sets		Moon R. & S.		Sun Rises		Sun Sets		Moon R. & S.			Ascension	Declination	
				H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.				
1 Tu	☾	☾	5	44	6 24	3 46	5 47	6 21	3 26	1st	0h42m	4°30'+	4.0						
2 W	☾	☾	5	42	6 26	4 10	5 45	6 21	3 55	11th	1h18m	8°17'+	1.1						
3 Th	☾	☾	5	41	6 27	4 31	5 44	6 22	4 21	21st	1h55m	11°49'+	Fast						
4 Fr	☾	☾	5	39	6 28	4 50	5 43	6 23	4 45	30th	2h29m	14°44'+	2.8						
5 Sat	☾	☾	5	37	6 29	5 9	5 41	6 24	5 9	Day	Right Ascension	Declin.							
6 Sun	☾	☾	5	36	6 30	5 28	5 40	6 25	5 33	VENUS									
7 M	☾	☾	5	34	6 31	sets	5 39	6 26	sets	As an Evening Star									
8 Tu	☾	☾	5	33	6 32	8 54	5 38	6 26	8 36	1st	2h31m	21°56'+							
9 W	☾	☾	5	31	6 33	10 15	3 6	6 27	9 38	11th	2h26m	21°54'+							
10 Th	☾	☾	5	30	6 34	11 10	5 35	6 28	10 42	21st	2h 8m	19°37'+							
11 Fr	☾	☾	5	28	6 35	morn	5 34	6 29	11 44	MARS									
12 Sat	☾	☾	5	26	6 36	14 5	3 6	6 29	morn	As a Morning Star									
13 Sun	☾	☾	5	25	6 37	1 12	5 31	6 30	43	1st	22h17m	12° 1'—							
14 M	☾	☾	5	24	6 38	2 15	3 6	6 31	1 35	11th	22h46m	9°13'—							
15 Tu	☾	☾	5	22	6 39	2 43	5 29	6 31	2 22	21st	23h15m	6°16'—							
16 W	☾	☾	5	20	6 40	3 15	5 28	6 32	3 0	JUPITER									
17 Th	☾	☾	5	19	6 41	3 44	5 27	6 33	3 34	Morning Star to 6th Then									
18 Fr	☾	☾	5	17	6 42	4 8	5 25	6 33	4 5	Evening Star									
19 Sat	☾	☾	5	16	6 43	4 32	5 24	6 34	4 35	1st	19h10m	22°23'—							
20 Sun	☾	☾	5	14	6 44	rises	5 23	6 35	rises	21st	19h16m	22°14'—							
21 M	☾	☾	5	13	6 45	8 10	5 22	6 36	7 51	SATURN									
22 Tu	☾	☾	5	11	6 46	9 25	5 21	6 36	9 0	As an Evening Star									
23 W	☾	☾	5	10	6 47	10 37	5 20	6 37	10 9	1st	3h55m	18°36'+							
24 Th	☾	☾	5	8	6 48	11 40	5 19	6 38	11 10	URANUS									
25 Fr	☾	☾	5	7	6 49	morn	5 18	6 39	morn	Morning Star to 28th Then									
26 Sat	☾	☾	5	6	6 50	3 5	5 17	6 39	4	Evening Star									
27 Sun	☾	☾	5	4	6 51	1 15	5 16	6 40	49	1st	20h37m	19° 6'—							
28 M	☾	☾	5	3	6 52	1 48	5 15	6 40	1 26	NEPTUNE									
29 Tu	☾	☾	5	2	6 53	2 12	5 14	6 41	1 55	Evening Star to 12th Then									
30 W	☾	☾	5	0	6 55	2 36	5 13	6 41	2 24	Morning Star									
										1st	7h40m	20°58'+							

The World's Calendar for Wheat Harvests

April is the harvest month in Lower Egypt, Asia Minor and Mexico.

In Mexico the harvest is carried on almost as it is in this country, except that oxen are frequently used in place of horses.

THE ALMANAC & ENCYCLOPEDIA

Farmers' Bulletins (Continued)

283. Spraying for Apple Diseases and the Codling Moth in the Ozarks
287. Poultry Management
289. Beans
290. The Cotton Boll Worm
291. Evaporation of Apples
292. Cost of Filling Silos
293. Use of Fruit as Food
295. Potatoes and Other Root Crops as Food
298. Food Value of Corn and Corn Products
302. Sea Island Cotton
303. Corn Harvesting Machinery
304. Growing and Curing Hops
310. A Successful Alabama Diversification Farm
311. Sand-Clay and Burnt-Clay Roads
313. Harvesting and Storing Corn
318. Cowpeas
321. The Split-Log Drag on Earth Roads
322. Milo as a Dry-Land Grain Crop.
323. Clover Farming on the Sandy Jack-pine Lands of the North
324. Sweet Potatoes
325. Small Farms in the Corn Belt
326. Building Up a Run-Down Cotton Plantation
331. Forage Crops for Hogs in Kansas and Oklahoma
332. Nuts and Their Uses as Food
333. Cotton Wilt
337. Cropping Systems for New England Dairy Farms
338. Macadam Roads
339. Alfalfa
343. The Cultivation of Tobacco in Kentucky and Tennessee
344. The Boll Weevil Problem
346. The Computation of Rations for Farm Animals by the Use of Energy Values
350. The Dehorning of Cattle
351. The Tuberculin Test of Cattle for Tuberculosis
354. Onion Culture
355. A Successful Poultry and Dairy Farm
359. Canning Vegetables in the Home
361. Meadow Fescue: Its Culture and Uses
362. Conditions Affecting the Value of Market Hay
364. A Profitable Cotton Farm
365. Farm Management in Northern Potato Growing Sections
367. Lightning and Lightning Conductors
368. The Eradication of Bindweed, or Wild Morning-Glory
369. How to Destroy Rats
371. Drainage of Irrigated Lands
372. Soy Beans
373. Irrigation of Alfalfa
375. Care of Food in the Home
377. Harmfulness of Headache Mixtures
378. Exterminating the Texas-Fever Tick
379. Hog Cholera
382. Adulteration of Forage-Plant Seeds
383. How to Destroy English Sparrows
385. Boys' and Girls' Agriculture Clubs
386. Potato Culture on Irrigated Farms of the West
389. Bread and Bread Making
391. Economical Use of Meat in the Home
392. Irrigation of Sugar Beets
395. Sixty-Day and Kherson Oats
396. The Muskrat
399. Irrigation of Grain
400. A More Profitable Corn-Planting Method
401. The Protection of Orchards in the Pacific Northwest From Spring Frosts by Means of Fires and Smudges
402. Canada Bluegrass: Culture and Uses
403. The Construction of Concrete Fence Posts
404. Irrigation of Orchards
407. The Potato as a Truck Crop
408. School Exercises in Plant Production
409. School Lessons on Corn
410. Potato Culls as a Source of Industrial Alcohol
411. Feeding Hogs in the South
413. The Care of Milk and Its Use in the Home
414. Corn Cultivation
415. Seed Corn
417. Rice Culture
420. Oats: Distribution and Uses
421. Control of Blowing Soils
422. Demonstration Work, Southern Farms
424. Oats: Growing the Crop
426. Canning Peaches on the Farm
427. Barley Culture in the Southern States
428. Testing Farm Seeds in the Home and in the Rural School
431. The Peanut
432. How a City Family Managed a Farm
433. Cabbage
434. The Home Production of Onion Seed and Sets
436. Winter Oats for the South
437. A System of Tenant Farming
438. Hog Houses
440. Spraying Peaches for the Control of Brown-Rot, Scab, and Curculio
441. Lespedeza, or Japan Clover
442. The Treatment of Bee Diseases
443. Barley: Growing the Crop
444. Remedies and Preventives Against Mosquitoes
446. The Choice of Crops for Alkali Land
447. Bees
448. Better Grain-Sorghum Crops
450. Some Facts About Malaria
453. Danger of General Spread of the Gypsy and Brown-Tail Moths through Imported Nursery Stock
454. A Successful New York Farm
455. Red Clover
458. The Best Two Sweet Sorghums for Forage
459. House Flies
462. The Utilization of Logged-off Land for Pasture in Western Oregon and Western Washington
463. The Sanitary Privy
464. The Eradication of Quack-Grass
472. Systems of Farming in Central New Jersey
473. Tuberculosis
474. Use of Paint on the Farm
475. Ice Houses
477. Sorghum Sirup Manufacture
478. How to Prevent Typhoid Fever
480. Methods of Disinfecting Stables
485. Sweet Clover
487. Cheese and Its Economical Uses in the Diet
488. Diseases of Cabbage and Related Crops and Their Control



Moon's Phases	D.	Intercol. T.		Eastern T.		Central T.		Mountain T.		Pacific T.	
		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
New Moon	6	4	24	3	24	2	24	1	24	0	24
First Quarter	13	7	45	6	45	5	45	4	45	3	45
Full Moon	20	3	18	2	18	1	18	0	18	11	18*
Last Quarter	27	8	4	7	4	6	4	5	4	4	4

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES												*19th			
				Northern States						Southern States						MAY—1913			
				Sun Rises	Sun Sets	Moon R. & S.	Sun Rises	Sun Sets	Moon R. & S.	Sun Rises	Sun Sets	Moon R. & S.	Sun Rises	Right Ascension	Declination	Fast Min.			
				H. M. H. M. H. M.	H. M. H. M. H. M.	H. M. H. M. H. M.	H. M. H. M. H. M.	H. M. H. M. H. M.	H. M. H. M. H. M.	H. M. H. M. H. M.	H. M. H. M. H. M.	H. M. H. M. H. M.	H. M. H. M. H. M.	H. M. H. M. H. M.	H. M. H. M. H. M.	H. M. H. M. H. M.	H. M. H. M. H. M.		
1	Th	☾	☾	4 59	6 56	2 55	5 12	6 42	2 48	SUN									
2	Fr	☾	☾	4 58	6 57	3 14	5 11	6 42	3 12	1st	2h33m	15° 3' +	2.9						
3	Sat	☾	☾	4 56	6 58	3 33	5 10	6 44	3 36	11th	3h12m	17° 51' +	3.7						
4	Sun	☾	☾	4 55	6 59	3 53	5 9	6 44	4 1	21st	3h51m	20° 10' +	3.6						
5	M	☾	☾	4 54	7 0	4 15	5 8	6 45	4 29	31st	4h32m	21° 54' +	2.6						
6	Tu	☾	☾	4 53	7 1	sets	5 7	6 46	sets	VENUS									
7	W	☾	☾	4 52	7 2	8 59	5 6	6 47	8 33	As a Morning Star									
8	Th	☾	☾	4 51	7 3	10 7	5 6	6 47	9 38	1st	1h47m	15° 43' +							
9	Fr	☾	☾	4 49	7 4	11 8	5 4	6 48	10 38	11th	1h36m	12° 8' +							
10	Sat	☾	☾	4 48	7 5	12 0	5 3	6 49	11 32	21st	1h39m	10° 12' +							
11	Sun	☾	☾	4 47	7 6	morn	5 3	6 50	morn	MARS									
12	M	☾	☾	4 46	7 7	4 35	5 2	6 50	20	As a Morning Star									
13	Tu	☾	☾	4 45	7 8	1 19	5 1	6 51	1 2	1st	23h43m	3° 15' —							
14	W	☾	☾	4 44	7 9	1 47	5 1	6 52	1 36	11th	0h12m	0° 13' —							
15	Th	☾	☾	4 43	7 10	2 11	5 0	6 52	2 6	21st	0h40m	2° 47' +							
16	Fr	☾	☾	4 42	7 11	2 35	5 6	6 53	2 36	JUPITER									
17	Sat	☾	☾	4 41	7 12	2 58	5 6	6 54	3 5	As an Evening Star									
18	Sun	☾	☾	4 40	7 13	3 24	5 6	6 54	3 37	1st	19h17m	22° 13' —							
19	M	☾	☾	4 39	7 14	3 52	5 6	6 55	4 11	21st	19h16m	22° 18' —							
20	Tu	☾	☾	4 39	7 15	rises	6 57	6 56	rises	SATURN									
21	W	☾	☾	4 38	7 16	9 24	6 56	6 56	8 55	Evening Star to 29th Then									
22	Th	☾	☾	4 37	7 17	10 20	6 56	6 57	9 51	Morning Star									
23	Fr	☾	☾	4 36	7 18	11 7	6 55	6 58	10 40	1st	4h 9m	19° 20' +							
24	Sat	☾	☾	4 36	7 19	11 46	6 55	6 58	11 22	URANUS									
25	Sun	☾	☾	4 35	7 20	morn	6 55	6 59	11 55	As an Evening Star									
26	M	☾	☾	4 34	7 20	1 46	6 54	7 0	morn	1st	20h40m	18° 59' —							
27	Tu	☾	☾	4 34	7 21	3 8	6 54	7 0	24	NEPTUNE									
28	W	☾	☾	4 33	7 22	5 9	6 53	7 1	50	As a Morning Star									
29	Th	☾	☾	4 32	7 23	1 17	6 53	7 2	1 13	1st	7h41m	20° 57' +							
30	Fr	☾	☾	4 32	7 23	1 35	6 53	7 2	1 37										
31	Sat	☾	☾	4 31	7 24	1 57	6 53	7 3	2 3										

The World's Calendar for Wheat Harvest

May is the harvest season in Algiers, Central Asia, China, Japan and Texas.
Texas is the first state in this country to begin the wheat harvest.

THE FABLE OF THE FARMER WHO WAITED FOR TO-MORROW

Once upon a Time there lived a Farmer who thought his Neighbor bought a Spreader because it was painted

Red. Like Pianolas and Lightning Rods, he considered them Luxuries. He had a Hunch that the Articles in the Farm Papers on Fertilization with a Spreader were written by the Joke Editor. He believed in spreading with a Fork, all right, but thought it a Punk Job for a Pillar of the Church. He figured it out that it was cheaper to let \$3.00 a ton Manure rot in the



Barnyard. The Old Farm had been coughing Crops for the last Fifty Years without systematic Fertilization, it ought to keep in the Game a few Years longer.

And all the Time the Farmer was wondering why he had to go out after Necessities with a Halter. Things went from bad to worse. He couldn't comb enough Hay from the Field to keep Old Funnyface and the Roan Mare this Side of the Glue Factory. The Hogs got to eating the Fence Posts. The Meadows dried up, and the Cattle took a Stock Car to the Cannery. About the Time the Weeds had come into their own, a progressive City near by bought the Place for a Graveyard.

Moral: No
Spreader, no
Crops; no
Crops, no Cat-
tle; no Cattle,
no Manure;
no Manure
no Spreader.





Moon's Phases		Intercol. T.		Eastern T.		Central T.		Mountain T.		Pacific T.	
	D.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
☾ New Moon	4	3	57	2	57	1	57	0	57	11	57
☾ First Quarter	11	0	37	11	37	10	37	9	37	8	37
☾ Full Moon	18	1	54	0	54	11	54	10	54	9	54
☾ Last Quarter	26	1	41	0	41	11	41	10	41	9	41

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon.	Moon's Pl.	UNITED STATES												JUNE—1913					
				Northern States						Southern States						Right Ascension	Declination	Fast Min.			
				Sun Rises	Sun Sets	Moon R. & S.	Sun Rises	Sun Sets	Moon R. & S.	Sun Rises	Sun Sets	Moon R. & S.									
H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.				
1	Sun	☾	☾	4 31	7 24	2 17	4 52	7 3	2 28	SUN								1st	4h36m	22° 3' +	2.4
2	M	☾	☾	4 30	7 25	2 43	4 52	7 4	3 0									11th	5h17m	23° 5' +	0.6
3	Tu	☾	☾	4 30	7 26	3 14	4 52	7 4	3 36									21st	5h59m	23° 27' +	Slow
4	W	☾	☾	4 30	7 26	3 54	4 52	7 5	4 20									30th	6h37m	23° 12' +	3.3
5	Th	☾	☾	4 29	7 27	sets	4 51	7 5	sets									Day	Right Ascension	Declin.	
6	Fr	☾	☾	4 29	7 28	9 55	4 51	7 6	9 27									VENUS			
7	Sat	☾	☾	4 29	7 28	10 41	4 51	7 6	10 16									As a Morning Star			
8	Sun	☾	☾	4 29	7 29	11 19	4 51	7 7	11 0									1st	1h56m	10° 6' +	
9	M	☾	☾	4 28	7 30	11 50	4 51	7 7	11 37									11th	2h21m	11° 18' +	
10	Tu	☾	☾	4 28	7 30	morn	4 51	7 8	morn									21st	2h52m	13° 13' +	
11	W	☾	☾	4 28	7 31	16	4 51	7 8	9									MARS			
12	Th	☾	☾	4 28	7 31	39	4 51	7 9	38									As a Morning Star			
13	Fr	☾	☾	4 28	7 32	1 24	51	7 9	1 7									1st	1h10m	6° 1' +	
14	Sat	☾	☾	4 28	7 32	1 26	4 51	7 9	1 37									11th	1h38m	8° 49' +	
15	Sun	☾	☾	4 28	7 32	1 53	4 51	7 10	2 10									21st	2h 6m	11° 27' +	
16	M	☾	☾	4 28	7 33	2 24	4 51	7 10	2 46									JUPITER			
17	Tu	☾	☾	4 28	7 33	3 44	52	7 10	3 31									As an All Night Star			
18	W	☾	☾	4 28	7 33	rises	4 52	7 11	rises									1st	19h13m	22° 25' —	
19	Th	☾	☾	4 28	7 34	9 14	52	7 11	8 33									21st	19h 4m	22° 42' —	
20	Fr	☾	☾	4 29	7 34	9 42	4 52	7 11	9 17									SATURN			
21	Sat	☾	☾	4 29	7 34	10 14	4 52	7 11	9 53									As a Morning Star			
22	Sun	☾	☾	4 29	7 34	10 41	4 53	7 11	10 25									1st	4h26m	20° 4' +	
23	M	☾	☾	4 29	7 35	11 14	53	7 11	10 50									URANUS			
24	Tu	☾	☾	4 29	7 35	11 21	4 53	7 12	11 16									As an Evening Star			
25	W	☾	☾	4 30	7 35	11 40	4 54	7 12	11 40									1st	20h39m	19° 3' —	
26	Th	☾	☾	4 30	7 35	11 58	4 54	7 12	morn									NEPTUNE			
27	Fr	☾	☾	4 30	7 35	morn	4 54	7 12	3									As a Morning Star			
28	Sat	☾	☾	4 31	7 35	17	4 55	7 12	27									1st	7h44m	20° 50' +	
29	Sun	☾	☾	4 31	7 35	42	4 55	7 12	56												
30	M	☾	☾	4 31	7 35	1 11	4 55	7 12	1 31												

The World's Calendar for Wheat Harvests

In June the harvest begins in Turkey, Spain, Southern France, California, Tennessee, Virginia, Kentucky, Kanasa, Utah and Missouri.

The modern self-binder is found throughout France, also in Spain.

IHC ALMANAC & ENCYCLOPEDIA

Analysis of Manure

Kind of Manure	Per Cent Water	Pounds per Ton				Value per Ton
		Nitrogen	Phosphorus	Potash	Dry Matter	
Fresh Barnyard Manure....	75	10	2	8	500	\$1.95
*Rotted Barnyard Manure..	75	10	5	8	500	2.04
Fresh Horse Manure.....	67	11.5	2.4	9.6	660	2.30
Fresh Hog Manure.....	77	16	8	6	460	3.29
Fresh Sheep Manure.....	30	28	8	19	1400	5.62
Fresh Cow Manure.....	77	8.4	5.8	8.8	450	2.01
Fresh Chicken Manure.....	57.5	27.22	10.6	11.6	840	5.35

*It requires two tons of fresh manure to make one ton of rotted manure.

Plant Food Removed from Each Acre by Various Farm Crops

Crops	Weight per Acre Pounds	Nitrogen Pounds	Phosphoric Acid Pounds	Potash Pounds	Lime Pounds
Wheat, 20 bushels.....	1,200	25	12.5	7	1
Straw.....	2,000	10	7.5	28	7
Total.....	3,200	35	20	35	8
Barley, 40 bushels.....	1,920	28	15	8	1
Straw.....	3,000	12	5	30	8
Total.....	4,920	40	20	38	9
Oats, 50 bushels.....	1,600	35	12	10	1.5
Straw.....	3,000	15	6	35	9.5
Total.....	4,600	50	18	45	11
Corn, 65 bushels.....	2,200	40	18	15	1
Stalks.....	3,000	35	2	45	11
Total.....	5,200	75	20	60	12
Meadow hay, 1 ton.....	2,000	30	20	45	12
Red clover hay, 2 tons.....	4,000	.....	28	66	75

How Much Manure to Spread

Different crops require different quantities of fertility. For instance, it takes a pound and one-half of nitrogen, approximately one-fifth of a pound of phosphorus, and about three-fourths of a pound of potassium to grow a bushel of corn and the stover. It therefore follows that to produce an eighty-bushel crop of corn, about ten tons of manure should be spread on an acre. About eight tons are necessary to grow a hundred-bushel crop of oats, and about the same quantity is required to produce a fifty-bushel crop of wheat. Cotton is the least exhaustive plant food of all the crops. A ton to the acre is a great sufficiency if the stalks and the cotton seed are returned to the soil. Cotton takes practically nothing from the soil excepting phosphorus. By growing velvet beans, soil vetch, or clover in a rotation there is no need of depleting the nitrogen content. An excellent compost is made by mixing a hundred bushels of cotton seed, a hundred bushels of stable manure, and two tons of rock or acid phosphate together. Let the compost ferment a few days, apply at the rate of thirty or forty bushels to the acre, then watch the cotton jump.



Moon's Phases	D.	Intercol. T.		Eastern T.		Central T.		Mountain T.		Pacific T.	
		H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
New Moon	3	1	6*	0	6*	11	6	10	6	9	6
First Quarter	10	5	37	4	37	3	37	2	37	1	37
Full Moon	18	2	6	1	6	0	6	11	6†	10	6†
Last Quarter	26	5	59	4	59	3	59	2	59	1	59

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES												Day	Right Ascension	Declination	Slow Min.
				Northern States						Southern States									
				Sun Rises	Sun Sets	Moon R. & S.	Sun Rises	Sun Sets	Moon R. & S.	Sun Rises	Sun Sets	Moon R. & S.	Sun Rises	Sun Sets	Moon R. & S.				
				H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.				
1 Tu	☾	☾	☾	4 32	7 35	1 46	4 56	7 12	2 11										
2 W	☾	☾	☾	4 32	7 35	2 33	4 56	7 12	3 0	1st	6h40m	23° 8' +	3.5						
3 Th	☾	☾	☾	4 33	7 34	3 29	4 57	7 12	3 59	11th	7h21m	22° 8' +	5.2						
4 Fr	☾	☾	☾	4 33	7 34	sets	4 57	7 12	sets	21st	8h 2m	20° 31' +	6.2						
5 Sat	☾	☾	☾	4 34	7 34	9 17	4 58	7 11	8 55	31st	8h41m	18° 19' +	6.2						
6 Sun	☾	☾	☾	4 35	7 34	9 51	4 58	7 11	9 36										
7 M	☾	☾	☾	4 35	7 33	10 20	4 59	7 11	10 11										
8 Tu	☾	☾	☾	4 36	7 33	10 43	4 59	7 11	10 41										
9 W	☾	☾	☾	4 37	7 33	11 6	5 0	7 11	11 10										
10 Th	☾	☾	☾	4 37	7 32	11 31	5 0	7 10	11 40										
11 Fr	☾	☾	☾	4 38	7 32	11 56	5 1	7 10	morn										
12 Sat	☾	☾	☾	4 39	7 31	morn	5 1	7 10	11										
13 Sun	☾	☾	☾	4 39	7 31	26	5 2	7 9	47										
14 M	☾	☾	☾	4 40	7 30	1 05	37	9 1	26	1st	2h34m	13° 52' +							
15 Tu	☾	☾	☾	4 41	7 30	1 47	37	9 2	15	11th	3h 2m	16° 4' +							
16 W	☾	☾	☾	4 42	7 29	2 39	47	8 3	9	21st	3h30m	17° 59' +							
17 Th	☾	☾	☾	4 43	7 29	rises	5 4	7 8	rises										
18 Fr	☾	☾	☾	4 44	7 28	8 14	5 7	7 7	52										
19 Sat	☾	☾	☾	4 44	7 27	8 42	5 6	7 7	8 24										
20 Sun	☾	☾	☾	4 45	7 26	9 6	5 6	7 6	8 53	1st	18h59m	22° 51' -							
21 M	☾	☾	☾	4 46	7 26	9 25	5 7	6 8	9 17	21st	18h48m	23° 8' -							
22 Tu	☾	☾	☾	4 47	7 25	9 43	5 8	7 5	9 41										
23 W	☾	☾	☾	4 48	7 24	10 35	5 8	7 4	10 5										
24 Th	☾	☾	☾	4 48	7 23	10 21	5 9	7 4	10 29	1st	4h42m	20° 38' +							
25 Fr	☾	☾	☾	4 49	7 23	10 41	5 10	7 3	10 54										
26 Sat	☾	☾	☾	4 50	7 22	11 7	5 10	7 3	11 25										
27 Sun	☾	☾	☾	4 51	7 21	11 39	5 11	7 2	morn										
28 M	☾	☾	☾	4 52	7 20	morn	5 12	7 1	2	1st	20h37m	19° 15' -							
29 Tu	☾	☾	☾	4 53	7 19	21	5 12	7 0	48										
30 W	☾	☾	☾	4 54	7 18	1 10	5 13	6 59	1 40										
31 Th	☾	☾	☾	4 55	7 17	2 15	5 14	6 59	2 44	1st	7h48m	20° 41' +							

The World's Calendar for Wheat Harvests

July is the harvest season in Roumania, Austro-Hungary, Southern Russia, Germany, Switzerland, France, Southern England, Oregon, Nebraska, Southern Minnesota, Wisconsin, Colorado, Washington, Iowa, Illinois, Indiana, Michigan, Ohio, New York, New England and Eastern Canada.

Relation of Manure to Moisture

Few people appreciate the value of manure for increasing the water-holding capacity of the soil. The effect of manure is to make the soil more spongy and porous, so that it is capable of holding more water. An average rainfall of one inch on an acre amounts to about ninety tons of water. Since from 275 to 450 tons of water are required to produce a crop, it is easy to see what a great volume of water is necessary. This practically means that four inches of water are necessary for the crop, not taking into account the amount evaporated. During the average summer day about 1.3 pounds are evaporated from every square foot of ground which is not protected in some way. In some sections the evaporation is even greater; in others, less, depending on the average heat. Since the average rainfall in the central states amounts to about 30 inches, increasing to 100 inches in Mexico, it is easy to see what a tremendous amount of water is evaporated. Every pound of corn stalks is capable of absorbing 2.5 pounds of water. Hence, every time a ton of corn stalks is returned to the soil and plowed under the soil is capable of absorbing just 5,000 pounds more water. If ten tons of manure are returned to an acre, the water content of the soil is increased 50,000 pounds. This amounts to practically one-fourth of an inch of rainfall to the acre, and is about a twelfth of the total amount of water needed to produce a crop. During the critical period of a dry season, land that is manured is therefore better able to withstand the drought than land which is not provided with fertilizer.

When to Top-Dress and When Not To

Whether to top-dress or not depends largely on the amount of manure lying around the barnyard and how it is handled. Top-dressing is also somewhat a matter of preference. If quick results are desired and only a limited amount of manure is available, it is best to use the manure as a top-dressing. Especially in the south where the soils leach badly, top-dressing will probably produce larger returns than manure that is plowed under. But in the northern states where the ground remains frozen from three to four months there is little danger of serious loss from leaching, and manure can therefore be used with equally good results either as a top-dressing or by being plowed under. In many parts of the country it is simply a case of having a certain amount



An IHC Spreader of the Low Down Type



Moon's Phases				Intercol. T.			Eastern T.			Central T.			Mountain T.			Pacific T.		
	D.	H.	M.		H.	M.		H.	M.		H.	M.		H.	M.		H.	M.
☾ New Moon	2	8	58		7	58		6	58		5	58		4	58			
☾ First Quarter	8	0	3*		11	3		10	3		9	3		8	3			
☾ Full Moon	16	4	27		3	27		2	27		1	27		0	27			
☾ Last Quarter	24	8	18		7	18		6	18		5	18		4	18			
☾ New Moon	31	4	38		3	38		2	38		1	38		0	38			

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon.	Moon's Pl.	UNITED STATES												*9th																																																																																																																																																																																																																																																																																																																																																																																													
				Northern States						Southern States						AUGUST—1913																																																																																																																																																																																																																																																																																																																																																																																													
				Sun Rises	Sun Sets	Moon R. & S.	Sun Rises	Sun Sets	Moon R. & S.	Sun Rises	Sun Sets	Moon R. & S.	Sun Rises	Sun Sets	Moon R. & S.	Day Right Ascension Declination Slow																																																																																																																																																																																																																																																																																																																																																																																													
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The World's Calendar for Wheat Harvests

August is the harvest month in Holland, Belgium, Great Britain, Denmark, Poland, Western Canada and the Dakotas.

Western Canada has been called the "Bread Basket of the World."

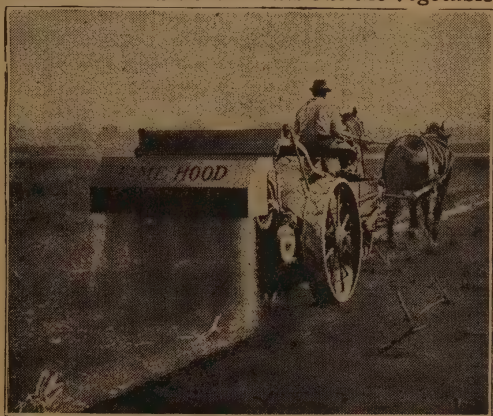
of available fertility to draw on. This can be exhausted immediately by applying a light application as a top-dressing, or cumulative effects can be secured by spreading the manure on top of the ground and plowing it under. It should be remembered, however, that manure plowed under affects the physical condition of the ground much more thoroughly than when applied as a top-dressing.

The Use of Phosphorus and Lime

There are only two elements in the soil which are apt to be deficient and which cannot be replaced by crop rotation. Nitrogen, although liable to be deficient, can be replaced by growing green and cover crops of clover, soil vetch, or velvet beans.

Phosphorus is a mineral, and can only be replaced by buying acidulated phosphorus or ground rock phosphate. If quick results are desired, it is best to use acidulated phosphate. This form yields its store of plant food quickly and is therefore depleted very rapidly. On the other hand, ground rock phosphate, though it does not combine so readily, lasts longer. It is a permanent soil builder. It is also much cheaper to use than the acidulated kind, costing about \$7.50 per ton for a grade that contains 250 pounds of phosphorus. Since only 23 pounds of phosphate are required to grow a hundred-bushel corn crop, 16 pounds for a hundred-bushel oat crop, and 16 pounds for a fifty-bushel wheat crop, it is easy to see how long the supply contained in a ton of ground rock phosphate will last.

Lime is not lacking in many soils. Clay soils in particular contain an abundance; sloughs and peaty soils are more apt to be deficient in lime than upland soils. Sandy soils which are subject to leaching are more often deficient in lime than the heavier soils which do not leach so badly. It is not necessary to apply lime blindly. There are signs which indicate the need of applying this valuable fertilizer; for instance, soils badly infested with horse sorrel show unmistakable evidence of acidity. On such soils, lime can usually be applied very advantageously. To test soil for acid, take a handful of moist dirt and place a piece of litmus paper in the moist soil. If the soil is acid the litmus paper will turn to a reddish or light brown shade. This is a good indication that lime is needed. Precaution, however, should be taken in applying lime. There are two forms of lime—caustic, which is nothing more or less than the lime used for ordinary building purposes, and ground limestone. The ground limestone is infinitely better for ordinary purposes than the caustic kind. The caustic lime eats out the vegetable elements of the soil to a considerable extent, and destroys much of the humus which is absolutely necessary for crop production. Neither ground limestone nor caustic lime should ever be mixed with the barnyard manure before spreading, but the manure be applied to the soil first, plowed under and the lime then used as a top-dressing. Cultivation will mix it with the soil and produce the desired effects. Authorities differ as to the quantity of ground limestone to apply, but under ordinary conditions it is best to apply not more than two tons to the acre.



By using a lime hood in connection with an IHC Spreader, ground limestone can be distributed very evenly, and in proper quantities



Moon's Phases	Intercol. T.	Eastern T.	Central T.	Mountain T.	Pacific T.
1 First Quarter	D. 7	H. 9 M. 6	H. 8 M. 6	H. 7 M. 6	H. 6 M. 6
2 Full Moon	15	8 46	7 46	6 46	5 46
3 Last Quarter	23	8 30	7 30	6 30	5 30
4 New Moon	29	0 57*	11 57	10 57	9 57

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES												SEPTEMBER-1913		
				Northern States						Southern States								
				Sun Rises	Sun Sets	Moon S. & R.	Sun Rises	Sun Sets	Moon S. & R.	Sun Rises	Sun Sets	Moon S. & R.						
H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	Day	Right Ascension	Declination	Fast Min.			
1	M	☾	♏	5 26	6 33	7 9	5 35	6 24	7 7					SUN				
2	Tu	☾	♏	5 27	6 31	7 34	5 36	6 23	7 38				1st	10h41m	8°20'+	0.0		
3	W	☾	♏	5 28	6 29	7 59	5 37	6 21	8 10				11th	11h17m	4°37'+	3.3		
4	Th	☾	♏	5 29	6 28	8 26	5 37	6 20	8 44				21st	11h53m	0°45'+	6.8		
5	Fr	☾	♏	5 30	6 26	8 59	5 38	6 19	9 22				30th	12h25m	2°45'—	9.9		
6	Sat	☾	♏	5 31	6 25	9 41	5 39	6 17	10 8				Day	Right Ascension	Declin.			
7	Sun	☾	♏	5 32	6 23	10 29	5 39	6 16	10 59				VENUS					
8	M	☾	♏	5 33	6 21	11 26	5 40	6 15	11 56				As a Morning Star					
9	Tu	☾	♏	5 34	6 20	morn	5 40	6 13	morn				1st	8h 8m	19°34'+			
10	W	☾	♏	5 35	6 18	29	5 41	6 12	56				11th	8h57m	17°15'+			
11	Th	☾	♏	5 36	6 16	1 35	5 42	6 11	1 58				21st	9h45m	14° 6'+			
12	Fr	☾	♏	5 37	6 15	2 38	5 42	6 9	2 58				MARS					
13	Sat	☾	♏	5 38	6 13	3 43	5 43	6 8	3 57				As a Morning Star					
14	Sun	☾	♏	5 39	6 11	4 45	5 43	6 4	4 53				1st	5h24m	22°51'+			
15	M	☾	♏	5 40	6 9	rises	5 44	6 5	rises				11th	5h50m	23°17'+			
16	Tu	☾	♏	5 41	6 8	6 32	5 45	6 4	6 37				21st	6h14m	23°29'+			
17	W	☾	♏	5 42	6 6	6 52	5 46	6 3	7 2				JUPITER					
18	Th	☾	♏	5 43	6 4	7 13	5 46	6 1	7 28				As an Evening Star					
19	Fr	☾	♏	5 44	6 3	7 39	5 47	6 0	7 59				1st	18h35m	23°25'—			
20	Sat	☾	♏	5 45	6 1	8 11	5 48	5 58	8 36				SATURN					
21	Sun	☾	♏	5 46	5 59	8 54	5 48	5 57	9 22				Morning Star to 10th Then					
22	M	☾	♏	5 47	5 58	9 42	5 49	5 56	10 12				Evening Star					
23	Tu	☾	♏	5 48	5 56	10 44	5 50	5 54	11 13				1st	5h 6m	21°13'+			
24	W	☾	♏	5 49	5 54	11 54	5 50	5 53	morn				URANUS					
25	Th	☾	♏	5 50	5 53	morn	5 51	5 52	20				As an Evening Star					
26	Fr	☾	♏	5 51	5 52	1 10	5 52	5 50	1 31				1st	20h27m	19°49'—			
27	Sat	☾	♏	5 52	5 50	2 28	5 52	5 49	2 42				NEPTUNE					
28	Sun	☾	♏	5 53	5 48	3 46	5 53	5 48	3 54				As a Morning Star					
29	M	☾	♏	5 54	5 46	5 5	5 54	5 46	5 6				1st	7h57m	20°16'+			
30	Tu	☾	♏	5 54	5 44	sets	5 55	5 46	sets									

The World's Calendar for Wheat Harvests

In September harvest is on in Scotland, Sweden, Norway, Northern Russia and Siberia, and continues into October.

How Do You Handle Your Bank Account?

You consider your bank account one of your resources. You withdraw the money as you need it. Is your supply inexhaustible? The chances are that it is just like any other bank account—you must make deposits before you can make withdrawals.

Have you ever stopped to think that your farm is your bank? The amount of fertility in the soil is your deposit. The crops you harvest each year are your withdrawals. Now, you can no more continue to make big withdrawals of crops year after year without making deposits of fertility, than you can withdraw money from the bank without making deposits. Your soil is just like a bank. Its wealth is no more inexhaustible. It can be withdrawn, but must be replaced.

If you will treat your soil the way you do your bank account, there will be no more danger of short crops or crop failures than there will be of your check coming back marked "no deposit." When you harvest a small crop, your farm is simply writing "no deposit" across the draft you have drawn.



An IHC Steel Frame Spreader in the Field

Conservation of the manurial resources of the farm and their return to the soil from which they came will keep the farm in tiptop producing condition. Keep up the fertility, be sure of good seed beds and good seed, and you will not know what crop failure means.

It is a waste of both manure and time to spread on one acre what would produce better results on two. This is exactly what happens when you spread with a fork. When manure is spread with a fork, from twenty to thirty loads to an acre are required. Experiment station reports show that if eight to ten loads are spread evenly, if the ground is completely covered, if the manure is pulverized, better results are produced than where twice this amount is used.

The only way to spread manure evenly, and in the proper quantities, is with a manure spreader. IHC spreaders are made in several types and sizes—low down types if you prefer that kind, or the regular height boxes, with either endless or reverse apron. Special attachments, which can be furnished at a slight additional cost, make it possible to use IHC spreaders for drilling and for spreading lime and commercial fertilizer.

These machines are handled by a dealer in your locality. Go see him today. His success depends upon your success. He will give you the straight facts about IHC spreaders.



Moon's Phases		Intercol. T.		Eastern T.		Central T.		Mountain T.		Pacific T.	
	D.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
① First Quarter	6	9	46	8	46	7	46	6	46	5	46
② Full Moon	15	2	7	1	7	0	7	11	7*	10	7*
③ Last Quarter	22	6	53	5	53	4	53	3	53	2	53
④ New Moon	29	10	29	9	29	8	29	7	29	6	29

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon	Moon's Pl.	UNITED STATES												*14th OCTOBER—1913			
				Northern States						Southern States									
				Sun Rises	Sun Sets	Moon S. & R.	Sun Rises	Sun Sets	Moon S. & R.	Sun Rises	Sun Sets	Moon S. & R.	Sun Rises	Sun Sets	Moon S. & R.	Day	Right Ascension	Declination	Fast Min.
				H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.				
1	W	☉	☾	5 56	5 43	6 24	5 55	5 45	6 39					1st	12h29m	3° 8'—	10.2		
2	Th	☉	☾	5 57	5 41	6 56	5 56	5 43	7 17					11th	13h 6m	6° 59'—	13.2		
3	Fr	☉	☾	5 58	5 39	7 33	5 56	5 41	7 59					21st	13h43m	10° 40'—	15.3		
4	Sat	☉	☾	5 59	5 38	8 21	5 57	5 40	8 50					31st	14h21m	14° 5'—	16.3		
5	Sun	☉	☾	6 05	5 36	9 16	5 58	5 39	9 46					Day	Right Ascension	Decln.			
6	M	☉	☾	6 15	5 35	10 18	5 58	5 37	10 46					VENUS					
7	Tu	☉	☾	6 25	5 33	11 24	5 59	5 36	11 49					As a Morning Star					
8	W	☉	☾	6 35	5 31	morn	6 05	5 35	morn				1st	10h32m	10° 17'+				
9	Th	☉	☾	6 45	5 30	306	6 15	5 33	50				11th	11h18m	5° 37'+				
10	Fr	☉	☾	6 55	5 28	1 35	6 15	5 32	1 50				21st	12h 4m	1° 17'+				
11	Sat	☉	☾	6 75	5 27	2 38	6 25	5 31	2 48					MARS					
12	Sun	☉	☾	6 85	5 25	3 37	6 35	5 30	3 42					As an Evening Star					
13	M	☉	☾	6 95	5 23	4 37	6 45	5 29	4 37				2d	6h38m	23° 30'+				
14	Tu	☉	☾	6 105	5 22	5 36	6 45	5 27	5 31				11th	6h56m	23° 24'+				
15	W	☉	☾	6 115	5 20	rises	6 55	5 26	rises				21st	7h14m	23° 15'+				
16	Th	☉	☾	6 125	5 19	5 43	6 65	5 25	6 1					JUPITER					
17	Fr	☉	☾	6 135	5 17	6 13	6 75	5 24	6 36					As an Evening Star					
18	Sat	☉	☾	6 145	5 16	6 51	6 75	5 23	7 18				1st	18h40m	23° 23'—				
19	Sun	☉	☾	6 155	5 14	7 37	6 85	5 22	8 7				21st	18h49m	23° 16'—				
20	M	☉	☾	6 165	5 13	8 34	6 95	5 20	9 4					SATURN					
21	Tu	☉	☾	6 185	5 12	9 42	6 105	5 19	10 9					As an Evening Star					
22	W	☉	☾	6 195	5 10	10 52	6 115	5 18	11 15				1st	5h 9m	21° 14'+				
23	Th	☉	☾	6 205	5 9	morn	6 115	5 17	morn					URANUS					
24	Fr	☉	☾	6 215	5 7	66	6 125	5 16	24					As an Evening Star					
25	Sat	☉	☾	6 225	5 6	1 22	6 135	5 15	1 34				1st	20h25m	19° 57'—				
26	Sun	☉	☾	6 235	5 4	2 39	6 145	5 14	2 44					NEPTUNE					
27	M	☉	☾	6 245	5 3	3 54	6 155	5 13	3 52					Morning Star to October 21st					
28	Tu	☉	☾	6 265	5 2	5 11	6 165	5 12	5 3					Then Evening Star					
29	W	☉	☾	6 275	5 1	6 31	6 165	5 11	6 16				1st	8h 0m	20° 8'+				
30	Th	☉	☾	6 284	59	sets	6 175	5 10	sets										
31	Fr	☉	☾	6 294	58	6 11	6 185	5 10	6 37										

The World's Calendar for Wheat Harvests

The harvest which began in September is continued during October throughout Sweden, Norway, and Northern Russia.

In these countries a large part of the harvesting work is done by women.

What a Good Seed Bed Means to Plant Growth

By C. A. Bacon, of the I H C Service Bureau

There has been so much written and said about plant growth, that the average mind wonders how much to believe and how much to disbelieve. A scientist tries a series of experiments that prove successful in one locality, the farmer tries them in another and meets with dismal failure. The farmer discredits the scientist. He puts his experience against the experimenter, and goes on farming in his own way. There are, however, a number of principles concerning the germination of seeds that are not open to differences of opinion. If these are known and diligently followed, better crops will be the reward.

Germinating seeds must of necessity have water, air, and a certain amount of heat. The rapidity of germination depends entirely on how these elements are provided. It naturally follows from this that the seed must be planted at the right depth to secure the conditions necessary for germination. The soil is warmer nearer the surface than it is deeper, but it is also dryer. This being a fact under ordinary conditions, the deeper the seed is planted, the longer it takes to germinate. If the farmer prepares his seed bed in the manner that the great majority of farmers do, he must, before planting, take into consideration the amount of moisture that he has in the soil, the way his seed bed has been prepared, and prophesy to a greater or lesser extent the amount of rainfall the season will have. This sort of procedure is guesswork at best.



Fig. 1—Uncut corn stalks cause many air spaces

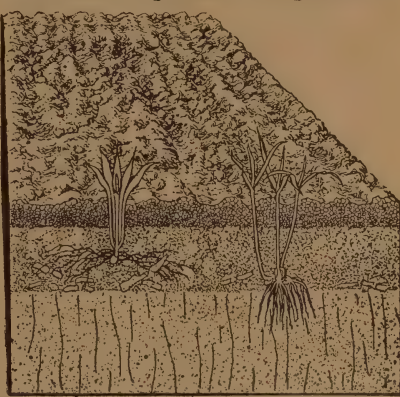


Fig. 3—Even thorough disking after plowing doesn't fill all air spaces

The manner in which the seed bed is prepared has everything to do with the proper germination and growth of the plant. Suppose the corn stalks are left standing in the fall and stock are turned into the field to winter. In the spring the ground is covered with corn stalks. If the average farm practice is followed, the corn stalks are broken down and plowed under, then the ground is harrowed with a peg-tooth harrow once or twice, and the seed planted.

Illustration No. 1 shows a seed bed which has been prepared in this manner. The reader will observe the pile of corn stalks that was left by the man who harrowed the field when he cleared a section of the harrow, the air space left at the bottom of the furrow by the corn stalks and corn stalk roots, also the wheat plant and the hill of corn. He will also notice that the wheat plant is in the ground more than half the depth of the plowed furrow, and that the corn is almost on the bottom.



Moon's Phases		D.	Intercol. T.		Eastern T.		Central T.		Mountain T.		Pacific T.	
			H.	M.	H.	M.	H.	M.	H.	M.	H.	M.
☾ First Quarter		5	2	34	1	34	0	34	11	34	10	34
☾ Full Moon		13	7	11	6	11	5	11	4	11	3	11
☾ Last Quarter		21	3	56	2	56	1	56	0	56	11	56*
☾ New Moon		27	9	41	8	41	7	41	6	41	5	41

Day of Mo.	Day of Wk.	Lt. and Dk. of Moon.	Moon's Pl.	UNITED STATES												*20th				
				Northern States						Southern States						NOVEMBER—1913				
				Sun Rises		Sun Sets		Moon S. & R.		Sun Rises		Sun Sets		Moon S. & R.		Day Right Ascension		Declination Fast Min.		
				H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	
1 Sat	☾	m	6	30	4	57	7	26	19	5	9	7	32	1st	14h25m	14°24'	—	16.3		
2 Sun	☾	h	6	31	4	56	8	46	20	5	8	8	33	11th	15h 5m	17°24'	—	15.9		
3 M	☾	h	6	32	4	54	9	10	21	5	7	9	36	21st	15h46m	19°54'	—	14.1		
4 Tu	☾	h	6	34	4	53	10	18	22	5	6	10	40	30th	16h25m	21°38'	—	11.3		
5 W	☾	h	6	35	4	52	11	24	23	5	5	11	41	Day	Right Ascension	Declin.				
6 Th	☾	h	6	36	4	51	morn	6	23	5	4	morn		MERCURY						
7 Fr	☾	h	6	37	4	50		27	6	24	5	4	39	As an Evening Star						
8 Sat	☾	h	6	38	4	49	1	28	6	25	5	3	1	35	5th	16h12m	24° 1'	—		
9 Sun	☾	h	6	40	4	48	2	28	6	26	5	2	2	30	10th	16h25m	24°13'	—		
10 M	☾	h	6	41	4	47	3	27	6	27	5	2	3	23	VENUS					
11 Tu	☾	h	6	42	4	46	4	27	6	28	5	1	4	19	As a Morning Star					
12 W	☾	h	6	43	4	45	5	29	6	29	5	0	5	15	1st	12h54m	4° 0'	—		
13 Th	☾	h	6	44	4	44	6	32	6	30	5	0	6	14	21st	14h28m	13° 7'	—		
14 Fr	☾	h	6	46	4	43	rises	6	31	4	59	rises		MARS						
15 Sat	☾	h	6	47	4	42	5	36	6	31	4	58	6	4	As an Evening Star					
16 Sun	☾	h	6	48	4	41	6	30	6	32	4	58	7	0	1st	7h30m	23° 7' +			
17 M	☾	h	6	49	4	40	7	35	6	33	4	57	8	3	21st	7h46m	23°18' +			
18 Tu	☾	h	6	50	4	39	8	42	6	34	4	57	9	7	JUPITER					
19 W	☾	h	6	51	4	38	9	55	6	35	4	57	10	14	As an Evening Star					
20 Th	☾	h	6	53	4	38	11	9	6	36	4	56	11	22	1st	18h56m	23° 6'	—		
21 Fr	☾	h	6	54	4	37	morn	6	37	4	56	morn		SATURN						
22 Sat	☾	h	6	55	4	36		22	6	38	4	55	30	As an All Night Star						
23 Sun	☾	h	6	56	4	36	1	34	6	39	4	55	1	36	1st	5h 5m	21° 6' +			
24 M	☾	h	6	57	4	35	2	49	6	40	4	55	2	44	URANUS					
25 Tu	☾	h	6	58	4	35	4	6	6	41	4	55	3	55	As an Evening Star					
26 W	☾	h	6	59	4	35	5	23	6	41	4	54	5	5	1st	20h25m	19°55'	—		
27 Th	☾	h	7	0	4	34	6	42	6	42	4	54	6	19	NEPTUNE					
28 Fr	☾	h	7	2	4	34	sets	6	43	4	54	sets		As an Evening Star						
29 Sat	☾	h	7	3	4	34	5	46	6	44	4	54	5	15	1st	8h 1m	20° 5' +			
30 Sun	☾	h	7	4	4	34	6	51	6	45	4	54	7	19						

The World's Calendar for Wheat Harvests

November is the harvest month in Peru and South Africa.

The American made machines are often drawn by a long-necked animal called the llama, the only animal domesticated by the South American Indians.

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How many times have we gone into the field and noticed that one hill of corn will be up nicely, while others will be barely breaking through the ground. The same thing is true of small grain. There are a number of conditions responsible for this, but the most important one is the preparation of the seed bed. In illustration No. 1 the drill was used in planting the grain and the corn planter in planting the corn. The illustration shows that the corn planter and the shoe of the drill left the ground pulverized around the seed, but did not prevent the seed from dropping too deep in the ground. The reason for this is that the bottom of the seed bed, being full of air spaces, the runners either broke through the clods or pushed them to one side. This allowed the seeds to drop further in the ground than they should. The next hill would probably be planted at the right depth, but in close proximity to the pile of corn stalks, which would retard its early germination and growth. In other places in the field the seed would probably be deposited at the right depth and grow into a healthy plant. But there is nothing sure about it.

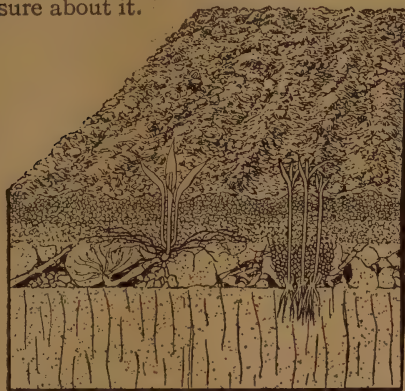


Fig. 2—Note air spaces due to plowing before disking



Fig. 4—A properly prepared seed bed disked before plowing

This is one reason why a stand of corn is so uneven on seed beds prepared in this manner. Of course there are other reasons why this difference will appear. The one next to the irregular depth of planting is that the corn stalks and trash are the best places in the world for the hatching of insects which entirely eat away the plant or injure it. The stalks hinder cultivation and are of small value as fertilizers when left in this condition. This much is true in the period of germination and early plant growth.

If the season happens to be dry these air spaces will prevent proper capillary connection with the sub-surface. The corn stalks and roots buried in the ground will be harboring places for insects that are common to any locality. It means that just at the time when the plants need moisture to mature the grain they will not get it, and as a consequence there will be a poor crop.

Suppose the spring is late, as it is in some localities every year. The farmer thinks he must plow his ground hurriedly in order to get his crop in. Does he gain anything by this method? Assume that he is planting corn. When the ground is plowed in this manner it is cold and cloddy. He has to plant his corn deeper than he wants to in order to get the planter to cover it. Since the ground becomes increasingly colder the farther it is from the surface, it takes the corn longer to germinate and longer to break through the ground, than it would if the farmer had prepared his ground better. When it comes



ARTIST: T. WILLIAMS

Moon's Phases	Intercol. T.			Eastern T.			Central T.			Mountain T.			Pacific T.		
	D.	H.	M.	H.	M.		H.	M.		H.	M.		H.	M.	
First Quarter	5	10	59	9	59		8	59		7	59		6	59	
Full Moon	13	11	0	10	0		9	0		8	0		7	0	
Last Quarter	20	0	16	11	16		10	16		9	16		8	16	
New Moon	27	10	59	9	59		8	59		7	59		6	59	

Day of Mo.	Day of Wk.	Lc. and Dc. of Moon	Moon's Pl.	UNITED STATES												DECEMBER—1913			
				Northern States						Southern States						Day	Right Ascension	Declination	Fast Min.
				Sun Rises	Sun Sets	Moon S. & R.	Sun Rises	Sun Sets	Moon S. & R.	Sun Rises	Sun Sets	Moon S. & R.	Sun Rises	Sun Sets	Moon S. & R.				
H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.		
1	M	☉	☾	7	54	34	8	06	46	4	54	8	24	1st	16h29m	21°48'—	10.9		
2	Tu	☉	☾	7	64	33	9	86	47	4	54	9	27	11th	17h13m	23° 0'—	6.7		
3	W	☉	☾	7	74	33	10	146	47	4	54	10	28	21st	17h57m	23°27'—	1.9		
4	Th	☉	☾	7	84	33	11	176	48	4	54	11	25				EL		
5	Fr	☉	☾	7	94	32	morn	6	49	4	54	morn		31st	18h41m	23° 7'—	3.1		
6	Sat	☉	☾	7	104	32	166	50	4	54	54	20		Day	Right Ascension	Declin.			
MERCURY																			
7	Sun	☉	☾	7	114	32	1	166	51	4	54	1	14	As a Morning Star					
8	M	☉	☾	7	124	32	2	166	51	4	54	2	9	5th	15h26m	16° 2'—			
9	Tu	☉	☾	7	134	32	3	166	52	4	54	3	5	10th	15h41m	17°12'—			
10	W	☉	☾	7	144	32	4	196	53	4	55	4	2	VENUS					
11	Th	☉	☾	7	154	32	5	246	53	4	55	5	3	As a Morning Star					
12	Fr	☉	☾	7	154	32	6	316	54	4	55	6	5	1st	15h17m	17° 0'—			
13	Sat	☉	☾	7	164	33	rises	6	55	4	56	rises		11th	16h 8m	20° 9'—			
14	Sun	☉	☾	7	164	33	5	246	55	4	56	5	52	21st	Too near the Sun				
15	M	☉	☾	7	174	33	6	336	56	4	56	6	58	MARS					
16	Tu	☉	☾	7	184	33	7	466	57	4	57	8	7	As an All Night Star					
17	W	☉	☾	7	184	33	9	16	57	4	57	9	16	1st	7h47m	23°45'+			
18	Th	☉	☾	7	194	34	10	146	58	4	57	10	22	30th	7h16m	26° 7'+			
19	Fr	☉	☾	7	204	34	11	246	58	4	58	11	27	JUPITER					
20	Sat	☉	☾	7	204	35	morn	6	59	4	58	morn		As an Evening Star					
21	Sun	☉	☾	7	214	35		376	59	4	59	34		1st	19h20m	22°30'—			
22	M	☉	☾	7	214	36	1	497	04	59	1	40		30th	Too near the Sun				
23	Tu	☉	☾	7	224	37	3	57	05	0	2	50		SATURN					
24	W	☉	☾	7	224	37	4	227	15	0	4	0		As an All Night Star					
25	Th	☉	☾	7	234	38	5	377	15	1	5	11		1st	4h56m	26°54'+			
26	Fr	☉	☾	7	234	39	6	487	15	1	6	19		URANUS					
27	Sat	☉	☾	7	234	39	sets	7	25	2	sets			As an Evening Star					
28	Sun	☉	☾	7	234	40	5	417	25	3	6	6		1st	20h29m	19°40'			
29	M	☉	☾	7	244	40	6	507	35	3	7	11		NEPTUNE					
30	Tu	☉	☾	7	244	41	7	577	35	4	8	13		As an All Night Star					
31	W	☉	☾	7	244	42	9	47	35	5	9	14		1st	8h 0m	20° 9'+			

The World's Calendar for Wheat Harvests

In December the harvest season begins in the Argentine Republic, Uruguay and Australia.

The Argentine harvest is continued well into the month of January.

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to cultivation he loses time, pulls up a great deal of corn, and has an uneven stand to work. He has hurriedly prepared his seed bed and planted his corn, but waits for it to grow, has trouble all through the cultivation and raises a poor crop because he was in a big hurry to plant his corn.

It is a matter of history in corn growing districts that nature practically always provides a season long enough to raise a crop of corn, consequently the scare caused by a late spring does irreparable harm. The farmer had much better spend the extra time that he is waiting for the corn to grow in the further preparation of the seed bed. The time spent in working the ground gives the sun and air a chance to warm it, and make a more compact seed bed. This is necessary if the seed is weak, and a great help to strong seed.

Illustration No. 2 shows corn stalk ground which was plowed, disked and harrowed with a smoothing harrow. While this leaves the ground in a little better condition on the surface, the same trouble at the bottom of the seed bed will be experienced as that which exists when the seed bed is prepared as shown in Illustration No. 1. The same corn stalks are there to give trouble. The main difference is that a deeper mulch has been prepared on the surface and such a seed bed will probably stand the drouth somewhat better.

One of the great troubles with a seed bed of this kind, particularly with reference to the smaller grains, is that germination being slower, a greater length of time is required for the stem to reach the surface, and then when it gets to the proper stage for growth, a new set of roots forms at the place where air moisture and heat are present in the right proportions. This is the point where the complete system of roots is formed. The lower roots which started from the seed wither and die. Time is required for this change to take place. And it happens before the plant can grow. All this shows the great importance of planting the seed the right depth. Planting the seed the right depth depends absolutely upon a seed bed prepared in the right manner.

Illustration No. 3 shows a stubble ground plowed in the spring and hastily prepared by disk and harrowing. Naturally this ground compacts more readily than the corn stalk ground. It does not have the trash to interfere with cultivation, nor does it breed insect pests, but the same trouble at the bottom of the seed bed exists here, as it does in the corn stalk ground.

Illustration No. 4 represents a corn stalk field disked and cross disked before plowing, and then harrowed. This ground compacts readily and easily, making a warm, moist, firm seed bed for any kind of a crop. With the bottom of the bed prepared properly the farmer can plant his seed at the right depth and feel sure that it is being deposited in the ground just where it ought to be. He can figure more nearly on what the season will bring forth because the seed bed is in the proper condition to resist excessive drouth or rains. In this seed bed the stalks have been cut into small pieces—they do not interfere with the compactness of the seed bed, capillarity nor cultivation. There will be no danger of a second set of roots forming, if the seed is planted at the right depth. Germination will take place in the quickest time and the shoot will develop into a healthy plant.

Just how the farmer should go about to put his seed bed in this condition he can best judge. He can readily see the difference in the bottoms of the seed beds, and no man can tell him how to prepare best his particular ground. He must decide the matter for himself. The important thing to do is to get the bottom of the seed bed compact so that good connections are made with the sub-surface.



An I H C Peg Tooth Harrow, with riding attachment

I H C Tillage Implements

Whether a farmer grows wheat on a ten-thousand-acre prairie farm, makes cotton on a big plantation, practices intensive farming on a three-acre truck patch, or "just farms," he makes his operations return him an abundant dividend only by preparing his seed bed in the best possible manner. To do this with the least expenditure of money and labor, at the right time, quickly and thoroughly, he must be equipped with implements designed for his needs, built according to the latest knowledge the science of agriculture affords and of the strongest, simplest, and most substantial construction possible.

The I H C line of tillage implements fulfills all of these requirements. It contains an implement for every purpose or operation necessary for the preparation of the seed bed for any crop grown, and for every condition or type of ground used

This line includes:

Disk Harrows

Vineyard Harrows

Combination Harrows

Spring Tooth Harrows

Peg Tooth Harrows

Cultivators

See the I H C local dealer or write us direct.



Double disking—the quickest way to prepare the seed-bed

IHC ALMANAC & ENCYCLOPEDIA

DEEP PLOWING

By ELMER O. FIPPIN

Professor of Soil Technology, Cornell University

Deep plowing may generally be taken as an indication of good farming. In any normal community those farmers who plow deeper than the average of their neighbors may safely be selected as the most successful managers. Deeper plowing means increased efficiency in the use of the natural resources of the soil.

Distinction should be made between deep plowing and sub-soiling. The latter consists in loosening the subsoil without bringing it to the surface or mixing it with organic matter. Its practice as to soils and seasons is far more limited than deep plowing.

The reasons for benefit from deep plowing are many. The heavier soils, including clay and those which tend to take on a hardpan character, are loosened up, which increases the ease of root penetration and the absorption of rain-water. Often the roots of crops are confined to a rather shallow, surface zone of soil by the refractory conditions of the soil immediately below. It is in such cases in particular that subsoiling would prove helpful.



Plowing twelve inches deep on an Illinois farm with an IHC tractor and 4-bottom plow

Since all good soil management involves the use of organic manures of one sort or another, deep plowing results in mixing this more thoroughly with the soil, with the attendant benefits. Very generally the failure to maintain a reasonable supply of organic matter in the soil, is coincident with a large decrease in productive capacity, not because the soil is exhausted in total food supply, but because bad physical condition of the soil results and the availability of the plant food present is thereby reduced. An important result is to increase the capacity of the soil to hold water in a form available to crops.

Where crops are likely to suffer from lack of water, which is especially true on light sandy and gravelly soils, deep plowing and the generous use of organic manures, coupled with thorough surface tillage is the primary method for the control of such conditions. On both sandy and clay soil this practice will increase the soil moisture to an extent equal to one or more inches of rainfall, and since the total amount of water required to produce medium yields of crops is only eight to ten inches of rainfall, this saving may be an important factor in success.

A fertile soil teems with minute organisms which are beneficial in many ways, such as the proper decay of manure and stubble, and the gathering of nitrogen from the air. Stirring the soil, which exposes it to the air and gives

IHC ALMANAC & ENCYCLOPEDIA

it a better moisture relation, stimulates these organisms and increases their number and activity. Experiments at the Kansas Experiment Station showed that plowing from eight to ten inches deep increased the number of bacteria, and their production of ammonia and reduced the tendency to the waste of nitrogen commonly known as denitrification.

All of the effects which have been mentioned react upon the soil itself to increase the availability of the plant food present. The normal soil must be regarded as an immense store of mineral plant food elements in a slightly available form. A primary object of tillage is to increase the availability of these materials — the thirty or fifty thousand pounds of potash and the two or three thousand pounds of phosphorus — so that wheat, for example, can get fifty pounds of one and twenty pounds of the other. The subsoil is just as rich in these constituents as the soil, but it is only by the maintenance of the conditions associated with deep plowing that they can be used as effectively as possible. Such methods proportionately reduce the need of commercial fertilizers, which are relatively expensive.

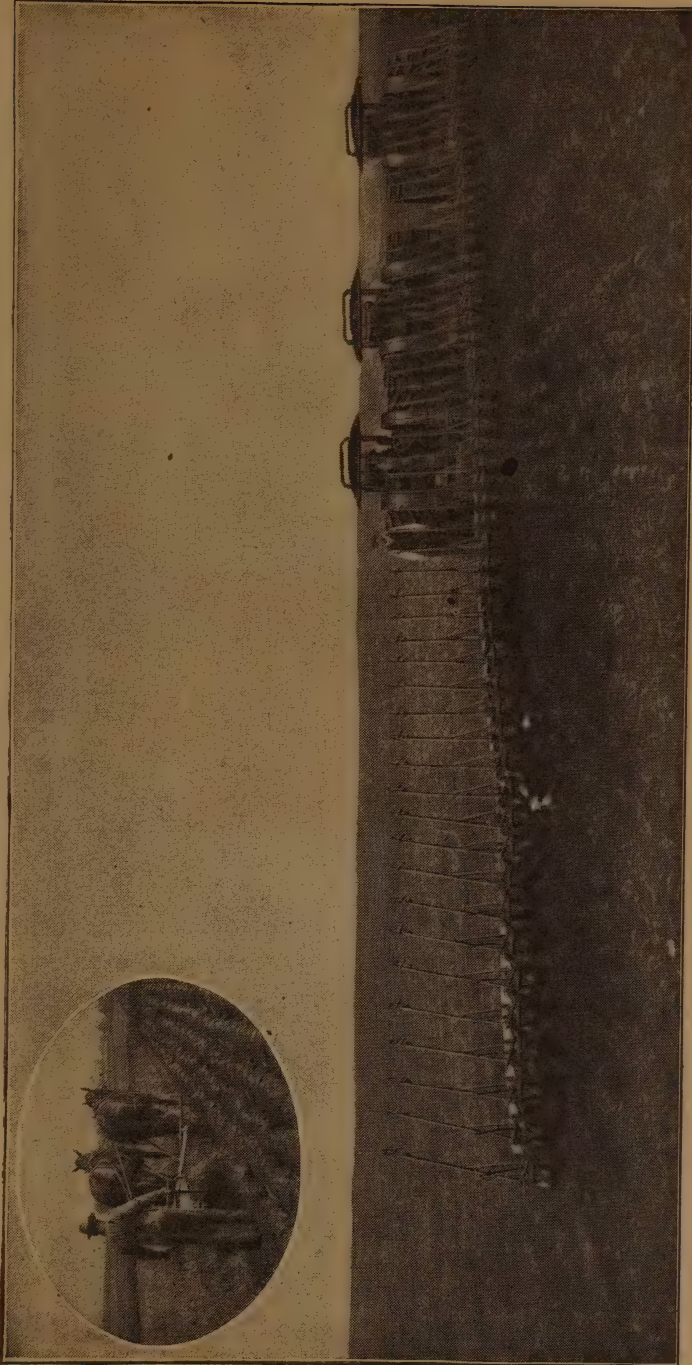


Plowing 11 inches deep near Richmond, Va. with an I H C 45-H. P. gasoline tractor and a 7-24" disk plow followed by a 10-disk tandem and a smoothing harrow

When coupled with the generous use of organic manures, there is no soil condition where deep plowing is not beneficial. But on light sandy and gravelly soils, which are already more loose than is desired, no benefit will follow from deep plowing without the manure. On heavy soils, deep plowing is beneficial, irrespective of the use of manure, because of the structural change. In the southern states it has been observed that green manure plowed under shallow is positively injurious in many cases, but deep plowing gives beneficial results. Humid and arid regions, temperate and tropical regions, alike respond to deep plowing. Its practicability may vary somewhat with the season, quantity of manure turned under, and the succeeding crop, but those limitations cannot be discussed here, and on the average they had better be disregarded rather than that deep plowing be not practiced.

Since deep plowing involves turning the lower material up to the surface, and since in the eastern section of the United States — humid regions in general — the subsoil tends to have some poisonous property, it is wise not to increase the depth of plowing too rapidly. An inch per plowing is as much as is ordinarily safe where the fresh soil is turned on top. If it is only partially brought to the surface, as is the case with a certain type of implement, the increase in depth may be greater.

Plowing to a depth of from nine to twelve inches is ordinarily practicable and is certainly desirable. There are, of course, limitations in the matter of draft but in many sections larger horses and larger implements are in the line of efficiency and economy.



THE WIDEST FURROW EVER TURNED

This illustration shows what it is possible to do with traction engines. Three I H C 45-H. P. Mogul kerosene-gasoline tractors and a 55-bottom engine gang are turning 55 furrows, 14 inches wide, plowing a strip of land 64.16 feet wide, at the rate of an acre in less than four minutes! The long gang was made up by connecting eleven sections, each section having five plows. The hitch works on the principle of the block and tackle.

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Tractor Farming



IHC Mogul 25-H.P. Kerosene Tractor Winning Gold Medal in Popular Size Kerosene Tractor Class—Winnipeg 1912 Farm Motor Contest

This is the day of tractor farming, just as fifty years ago was the day of hand farming. Don't underestimate the country-wide enthusiasm for tractors. It's not a "flash in the pan" demand. Horses will never again be the only farm power. Farmers must grow bigger crops at less expense than they can do with horse power.

Tractor farming cuts down the cost of raising crops, and it raises profits. With a tractor you can plow, harrow, seed, cultivate, harvest, and haul at a fraction of what it costs to do the same work with horses. With a tractor you can operate the ensilage cutter, saw, grinder, pump, and other machines. It's such an inexpensive power that road improvement is becoming popular.

I H C Kerosene-Gasoline Tractors

In every community where one I H C tractor has been sold, others have come in. That's the best proof we can offer that these tractors are doing what farmers expect them to do. I H C kerosene-gasoline tractors are made in several sizes—12, 15, 20, 25, and 45-horse power—so that the man with 160 acres can secure an outfit which will be just as profitable to him proportionately as the big outfit is to the man who farms a thousand acres.

Users of I H C tractors are never disappointed. Is overtime demanded?—the I H C tractor never tires. Is the load a heavy one?—the I H C has plenty of reserve power. Is the work dusty and dirty?—the I H C has no exposed bearings or rapidly moving parts to be injured. It carries its own daily supply of fuel—kerosene or gasoline—whichever you wish to use. It has done, is doing, and will do more work in less time, at lower cost, and will last longer than any other tractor you can buy. These are statements of fact backed by records made in actual use both in contest fields and on real farms.

Investigate tractor farming. Get all the facts from the I H C local dealer. If there is any specific information he cannot give you, write us direct or to the I H C Service Bureau.

Doubling Land Values



Note the length of the brush being turned under. This is the outfit owned by A. L. and Bruce Rogers

A year ago, A. L. and Bruce Rogers bought a 320-acre farm near Dennison, Iowa, paying \$52.50 an acre. This was one of the lowest priced pieces of land in the county because of the heavy growth of hazel brush and scrub oak, which made it impossible to ever farm much of it without the expense for clearing.

These farmers bought an I H C 45-h. p. Mogul Tractor, burning cheap kerosene oil, and a huge plow cutting a 24-inch furrow, 12 inches deep. The engine consumes approximately one-eighth of a gallon of kerosene per H. P. hour, costing 7 cents a gallon, and it requires two men for its operation, one on the engine and one on the plow. With this outfit they plunge along through stiff brush and saplings at the rate of about two miles an hour. Trees and roots 3 inches thick are cut off like paper, and the whole mass turned under a foot of sod to disintegrate and become fertilizer for future crops. The outfit leaves in its path a plowed furrow 24 inches wide and nearly 12 inches deep, the earth and brush being literally turned upside down. Land worth \$52.50 an acre is almost instantly turned into land which the owners hold at \$150 an acre.

Principles of Good Road Making

The grade is the most important factor to be considered in the location of roads. Steep grades are always to be avoided, if possible. They become slippery with coatings of ice and water. They allow washing of the soil, and they require additional power to haul a load in proportion to the grade.

Good drainage is an essential feature of a road. Water is the great road destroyer. Good drainage remains substantially the same whether the road be constructed of earth, gravel, sand, stones or asphalt.

Sub-drainage is also necessary. Water should not be allowed to pack the sub-structure from below any more than it should be permitted to percolate through from the top.



I H C 45-H. P. Mogul Burning Kerosene, operating a Jumbo Road Leveler near Clinton Illinois. This outfit is a potent factor in the Good Roads Movement

Principles of Good Road Making—Continued

The surface of the road should be kept as smooth as possible, that is, free from ruts, wheel tracks, holes or hollows.

The wearing surface of the road should be like a roof, the highest part in the middle, so that the water will flow freely and quickly into the gutters.

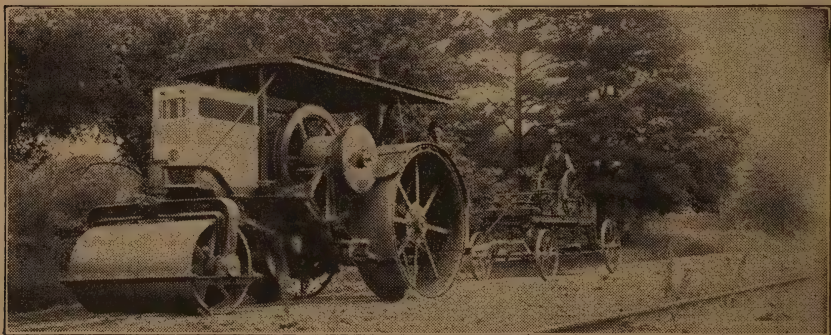
The durability of the road depends upon the power of the material of which it is composed to resist those natural and artificial forces which are constantly acting to destroy it.

The materials employed for the surface of the road should be both hard and tough, and should possess by all means cementing and re-cementing qualities. The tougher limestones are very good; the softer ones will wear, wash and blow away very rapidly.

Earth is the poorest of all road materials aside from sand, yet dirt roads are the most common. If the surface of an earth road be prepared with a road machine, and properly rolled with a heavy roller, it can usually be made sufficiently firm and smooth to sustain traffic without rutting and to resist the penetrating action of the water.

Sand roads are not improved by drainage. Nothing will ruin a sand road quicker than to dig a ditch on each side to draw off the water. The best way to keep a sand road firm is to keep it constantly damp.

Good gravel affords the simplest, cheapest, and most effective method of improving country roads.



Another I H C Road-Making Outfit that is Helping Along the Good Roads Cause. This is a 25-H. P. Titan Combined Road-Roller Tractor. The Roller in Front may be Replaced by Regular Trucks and the Outfit Turned into a Regulation Tractor for Plowing, Hauling, and Other Work

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Comparative Cost of Road Construction (per day)

	With 20-H. P. Gasoline Tractor						With Steam Tractor						With 4 Teams				
	Cost of Fuel	Cost Lubricating Oil	Engine Operator	Total Cost per day	Miles traveled	Cost per Mile	Cost of Coal	Cost of Lubricating Oil	Engineer	Helper	Team and Water Haulers	Total Cost per day	Miles traveled	Cost per Mile	Team Hire	Miles traveled	Cost per Mile
Illinois.....	2.00	.50	3.00	5.50	18	.30	3.50	.50	3.00	2.00	4.00	13.00	18	.72	14.00	9	1.40
Nebraska....	2.80	.38	4.00	7.18	18	.40	3.76	.50	5.00	2.50	4.00	16.41	18	1.09	15.00	9	1.66
New York...	1.80	.25	3.00	5.05	18	.28	3.00	.25	3.00	2.00	4.00	12.25	18	.68	16.00	9	1.77

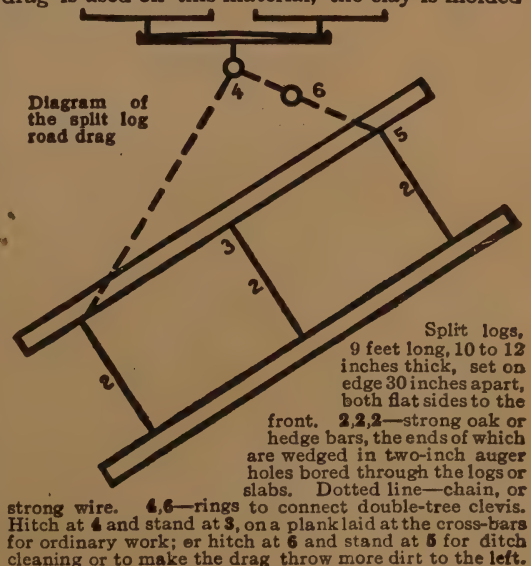
In every instance the gasoline tractor did as much or more than the steam tractor, and from a half to a third more work than could be accomplished with horses. In New York state, with a gasoline outfit, road work can be done at less than half the expense of the steam outfit, and at one-third the cost of horse power. Figures from the Bennett Township Board of Illinois show that in 134 days' grading and leveling, a tractor saved \$1,086.32 over steam, and \$1,220.33 over horses doing only half the work.

How to Make a Road Drag

No matter how bad the road material may be, a good road is possible if the split-log drag is used. Clay, for instance, makes an almost impassable road when water-soaked. If the drag is used on this material, the clay is molded and tamped into a form that bakes on the surface and sheds water instead of absorbing it, making one of the most desirable dirt roads. If the road is oval, hard and smooth it will shed water.

It has been estimated that the road drag invented by D. Ward King, Maitland, Mo., has made model roads out of almost impassable clay ones of the corn belt, and at a cost of less than \$10.00 per mile.

The best time to use the drag is in spring. By addressing the State Boards of Agriculture of Kansas and Missouri complete descriptions of this drag may be obtained.



How to Select Seed Wheat and Oats

The practice of picking seed corn in the field is recognized by most farmers as the only reliable means of securing good seed corn. If farmers tried to pick out their seed corn after it was shelled, they would have nothing to guide them but the size and shape of the kernels. This would often be misleading, as even a poor ear from a poor plant will have a few good appearing kernels. In all probability such kernels will not reproduce their own desirable qualities, but instead will produce a plant having all the inferiority of the plant on which the seed grew. This same reasoning should be applied when wheat or oat seed is being selected.

Nearly fifty years ago a farmer in Pennsylvania by the name of Fultz realized the value of seed selection. Discovering three remarkably fine heads of beardless wheat in a field, he gathered them and planted them separate from any other wheat. From this small start was developed the Fultz variety of wheat. This illustrates what careful selection and treatment of grain seed will accomplish. In fact, most varieties of our grains have been evolved in much the same manner as was the Fultz variety of wheat.

The development of new varieties of wheat or oats is not an object with many farmers. Their chief aim is to get seed that will insure a good yield. This can be accomplished best by selecting the seed while the grain is standing in the field just before harvest. In selecting the seed, go through the field and pick out the heads that are full and well developed from one end to the other. Consider the stool from which the head came and be sure that it has produced a large number of stalks bearing the kind of heads you are looking for. Do not be deceived as to the strength of a plant which appears vigorous because it is growing on a very rich spot of ground or because no other grain has grown very close to it. Such a plant has grown under exceptionally favorable conditions and probably would not do nearly so well if grown under ordinary conditions. Select seed from plants that have grown under the average conditions of your field.

Another quality of the plant which should be considered is the strength and straightness of the stalk. This is especially true of oats. A strong, straight oat stalk will not lodge nearly so easily as the weaker kind.

Do not select seed from a plant that is badly affected with rust. You will only perpetuate that undesirable condition.

The seed selected in the above manner should be planted next season in a plot by itself and carefully watched. A good plan is to plant the seed from each head in a separate row. If this is done it will be found an easy matter to eliminate the seed produced by any head which for some reason lacks the ability to reproduce its own good qualities.

The rows should be planted about a foot apart and around the plot within a foot of the outside row, a few rows of ordinary wheat should be planted. This will prevent the outside rows of the plot from gaining any undue advantage which they would ordinarily have on account of being on the outside.

The rows should be numbered and a record kept of the good or poor qualities they develop throughout the growing season. The difference in the different rows will be surprising considering that they all started from seed very much alike.

When the grain is ripe, only the best heads from the best seeds in the plot should be selected and then carefully threshed out by hand. The poor rows and heads should be discarded. The seed secured may be planted in a large field the next season if desired and the results will be surprisingly good. For the best results, however, the process of selecting and eliminating should go on for several years; each year selecting and planting the best grains in a separate plot.

Drilling Versus Broadcasting

With good farmers, broadcasting is a method of the past. Experiments conducted at the various Experiment Stations, and results obtained on every farm where a drill is used, demonstrate conclusively that for seeding all grain crops a drill should be used.

Under dry conditions, broadcasting should never be practiced; under humid conditions, it is less dangerous, but, withal, not as good as drilling. Drilling not only produces more grain to the acre, but requires less planting.



Type of I H C Drill Used in the Southwest

But care should be exercised in selecting a drill. Several points should be looked into very carefully. Is the drill light in draft? Are the furrow openers designed to work in your soil? Is the seed properly deposited and carefully covered? Has the grain box ample capacity? Can you accurately regulate the quantity sown per acre? Will the machine withstand hard usage? All these points and any others which you might bring up are worked out to the highest point of perfection on I H C drills.

The advantage of purchasing an I H C drill is that you can find just the drill suited to your locality. This is an important point. No man can possibly design one drill and expect it to work equally well in the Northwest, in the East, and in the South. The peculiarities of each territory were taken into consideration, and an I H C drill designed to specially meet these conditions. For that reason the I H C line includes single and double disk drills, hoe, and shoe drills. Each type of drill is made in several styles and in many sizes. We are confident that we have the drill which will meet your conditions better than any other drill on the market.

Why not see the I H C local dealer at once? Ask him to show you the drill he handles and tell you why it is the drill you can use to advantage. Ask him for a catalogue, or, if you prefer, write us direct.



Three I H C Grain Drills and an I H C Mogul 25-H. P. Kerosene-Gasoline Tractor

I H C ALMANAC & ENCYCLOPEDIA

Progress and Plenty



Harvesting 40 ft. of grain at each round with Five I H C Binders drawn by an I H C Kerosene-Gasoline Tractor

The day of farming without machines is gone forever. The manure spreader, gang plow, disk harrow and seeder prepare the way for harvesting and haying machines. A thousand acres are cultivated today with greater ease and dispatch than a hundred were forty years ago. Credit for this progress belongs to the farmers who use harvesting and haying machines and tools made and sold under these well known names:

Champion

Deering

McCormick



Milwaukee

Osborne

Plano

With the progress has come the era of plenty. Good judgment in the selection of harvesting machines has been an all-important factor in our agricultural progress. It always will be. The importance of harvesting the crops without waste and at the right time, can never be overlooked. Whether your grain at harvest time be standing, down or tangled, short or tall, you must have a binder that will handle it without waste. I H C binders have always done this. They have behind them the history of more than fifty years of success. They are so simple that they can be trusted safely to unskilled help. Every bit of material is of approved quality. Not the least important point which should urge you to use I H C harvesting machines is the fact that repair parts for any I H C machine can be found within a few hours of your farm. World-wide distribution of I H C machines and repair parts brings them so close to you that should an accident happen to your binder you are not obliged to wait several days for a repair part.

A good binder should have good twine to bind with. This is why you should use I H C binder twine. These brands—Champion, McCormick, Osborne, Deering, Milwaukee, Plano and International made in four grades: sisal, standard, manila and pure manila—are made to work smoothly without waste or trouble in I H C binders.

See the I H C local dealer. He will set up a binder for you to inspect. Get catalogues from him, or write us.

THE FABLE OF THE OLD-FASHIONED FARMER

Once there lived a Farmer who had a Son. And the Boy was a Husky. He would walk away under the biggest Hay Cock in the Field and come up with his Hair parted. The Farmer figured it out that there was no Need of Agricultural Machines as long as the Human Hayloader responded to the Bacon Call in the Morning. The only Difference between the Boy and the Work Horses was that the Boy slept in the House.



The Farmer was stepping on his own Halter Rope. He made the big Fellow pump Water by Hand

and spread Manure with a Fork, because Grain Hooks were made before Binders. The way Father had mangled Farm Work back in the Days of Bull Run was good enough for Sonny. Frankly, there were Grey Hairs in his Logic.

About the Time the Old Man needed him most, the Boy got wise to the Fact that the 4th of July was a Bum Day to start Haying and got a Job driving Stakes for a Circus. And the Farmer is still wondering why the Boy left Home.

Moral: Because a Boy has a strong Back you can't make a Donkey of him.



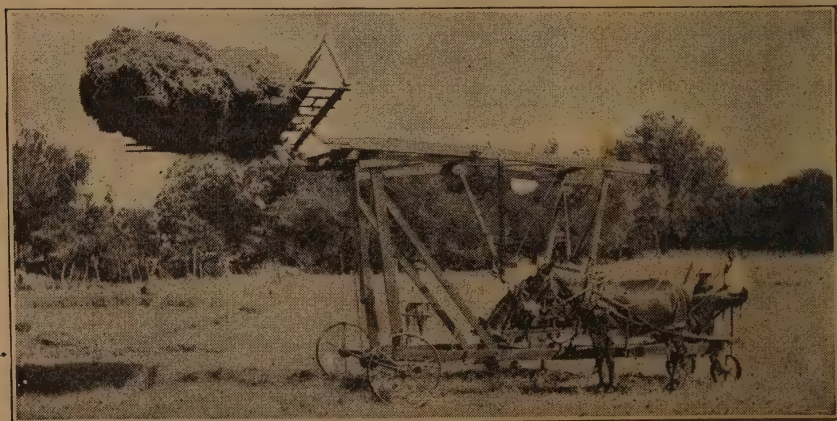
IHC Hay Machines and Tools

In these days of high priced help, it is necessary that every farmer have a hay harvesting equipment that will handle the crop in the least expensive way and insure hay of the best quality. The old way of handling hay, in which strong arms and forks played the chief part, is so wasteful of time and labor that no farmer can afford to use it any longer. The very best quality of hay can now be secured at a minimum expense for help by using a side-delivery rake and a hay loader. These machines eliminate all the slow, laborious work that resulted from the old method. The side-delivery rake puts the hay into light, fluffy windrows, where it can air-cure quickly and uniformly. Any man who has ever pitched hay up on a wagon on a hot day can easily appreciate the modern hay loader which does away with all this drudgery. The old method almost always resulted in uneven curing, as one part of the hay would be sun-dried almost to worthlessness and another part would contain too much moisture.

One of the greatest helps in securing a high quality of hay is the hay tedder. This machine is especially valuable in clover and where the hay is heavy, as it permits the windrows to be stirred so that the air can circulate freely through them. The hay tedder is invaluable in cases where the hay has been rained upon in the swath or windrow, as its use permits the hay to be quickly and thoroughly dried.

The most economical way to handle hay when it is to be stacked in the field is to use sweep rakes and stackers. No other method equals this for saving time and labor. In sections where large acreages are devoted to hay, stackers and sweep rakes are considered absolutely necessary. Some farmers prefer to use the combined stacker and sweep rake—a machine which picks the hay up from the windrow and elevates it to the stack.

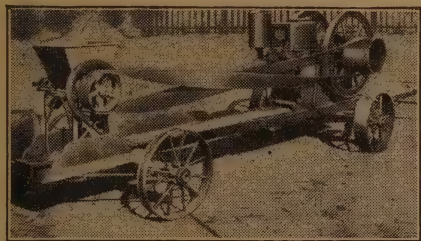
The I H C line includes a great variety of hay machines and tools that meet all requirements, saving time and labor, and insuring hay that is bright, clean, and of uniform quality. In this line there are plain and vertical lift mowers for one and two horses, self and hand-dump rakes, side-delivery rakes, sweep rakes, loaders, stackers, combined sweep rakes and stackers, and hay presses. You will find in the I H C line, machines particularly adapted to your local conditions and ideas of handling hay. Ask the I H C local dealer to show you the machines of this line which he handles. He has selected these machines with a careful consideration of your special requirements.



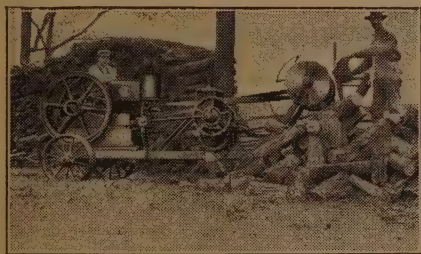
A Combined Stacker and Sweep Rake in the Field



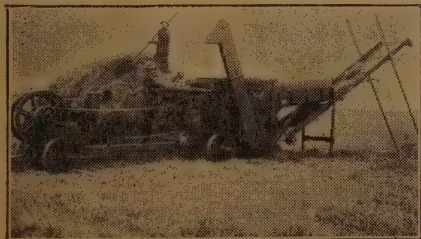
An International motor press baling hay



You can use the engine to run the feed grinder



The engine will operate a wood saw



You can belt the engine to a small thresher

An All the Year 'Round Machine

With the International motor press a man can bale his hay and corn fodder; and after that work is done, the engine can be detached from the bale chamber and used as a portable gasoline engine for operating corn shellers, small threshers, wood saws, feed grinders, concrete mixers and many other farm machines.

The International motor hay press is a self-contained outfit and the bale chamber and gasoline engine are connected and mounted together on substantial trucks. This simple and convenient arrangement does away with the difficulties of setting and transporting that occur where a power press and separate engine are used.

The I H C line also includes horse power presses which are very light draft and convenient in arrangement. An I H C horse power press can be depended upon to bale a greater amount of hay in a given time than any other horse press of equal size and do it with the least strain on the horses.

I H C hay presses are made in the following styles and sizes:

International Motor Hay Presses

- 14x18 bale chamber with 3, 4 or 6 horse power engine.
- 16x18 bale chamber with 4 or 6 horse power engine.
- 17x22 bale chamber with 6 horse power engine.

I H C Two-Horse Presses

- 14x18 bale chamber.
- 16x18 bale chamber.
- 17x22 bale chamber.

I H C One-Horse Press

- 14x18 bale chamber.

How to Select Good Ears of Corn

1. A good ear should be cylindrical or nearly so. It should be full and strong in the middle portion, and the circumference should be approximately three-quarters of the length. The rows of kernels should be straight, and not less than sixteen nor more than twenty-two in number. The ear should be from eight and one-half to ten inches long.



Grand Champion Single Ear at 1911 National Corn Exposition, Columbus, Ohio

2. The color of the grain should be true to variety, even in shade, and free from mixture. White corn should have white cobs, and yellow corn, red cobs.

3. The tip should not be too tapering. It should be well covered with straight rows of regular kernels of uniform size and shape.

4. Open, swelled, expanded, flattened, and pinched butts are objectionable. The rows of kernels should extend in regular order over the end of the cob, leaving a depression when the shank is removed.

5. The shape of the kernel should conform to the variety standard. The tips of the kernels should be full and strong, leaving no space between them near the cob. Toward the crowns, the edges of the kernels should be so shaped as to leave merely enough space between the rows to facilitate drying. Shrunk or pointed tips and badly rounded crowns are objectionable. The crowns of the kernels should be rather deeply dented, but not pinched or chaffy. The dent should extend evenly across the kernel, and there should be no pointed or sharp margins. The kernels should be about five-sixteenths of an inch wide by five-eighths of an inch long, and six to the inch in the row.

6. The ears should be well matured, firm, and sound. The germs should be uninjured, large, bright, fresh and vigorous looking.



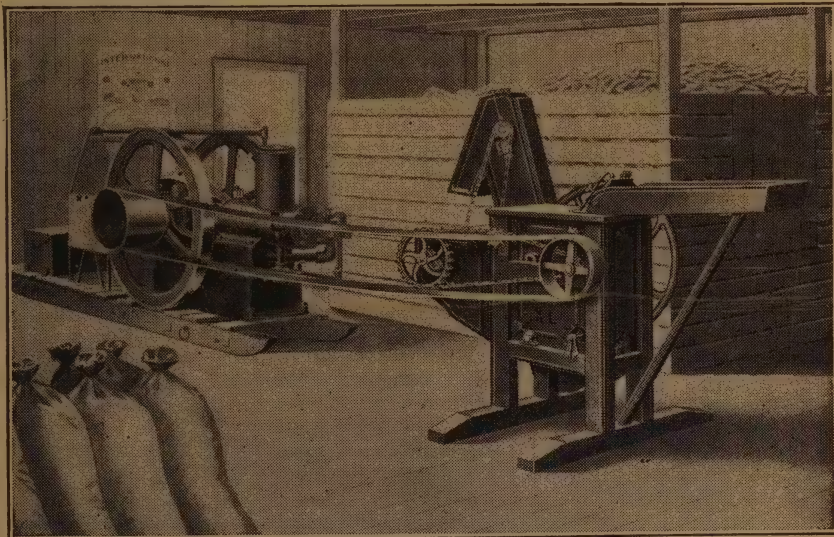
I H C Corn Planters are made in several types and in different sizes, planting in rows from 28 inches apart up to 3 feet 8 inches apart. These styles, in connection with the various plates which can be furnished and the different adjustments which may be made for drilling, check wire or automatic dropping, make the I H C line complete.

IHC ALMANAC & ENCYCLOPEDIA

Keystone Shellers

Corn, to be easily marketed, should be shelled. When in this condition it is ready to be sold whenever you wish or when you can secure the highest price. It does not take up as much room in your granary as whole corn, and it leaves you the cobs, which make excellent fuel or which can be ground to be mixed with the corn and used as feed.

Keystone corn shellers, included in the I H C line of farm machines and



An IHC Engine belted up to a Keystone Sheller makes an outfit which will pay a profit on any farm

implements, are recognized everywhere as standard machines for clean shelling. They run easily, and do not crack or break the kernels or cobs to any noticeable extent. The Keystone line is complete. It includes 2, 4, and 6-hole shellers in mounted, down, and unmounted styles. It also includes the XL 2-hole hand feed machine, and steel and wood frame Pony hand shellers.

Grain Estimates

A wagon box ten feet long, three feet wide and twenty-five inches deep will hold 27.8 bushels of ear corn, or 50.2 bushels of shelled corn. A crib ten feet wide, ten feet high and sixteen feet long will hold 711 bushels of ear corn. Of ear corn one bushel is contained in two and a quarter cubic feet. In figuring shelled corn and grain, the same space will hold one and four-fifths times as much grain as it will of ear corn. A crib that will hold 800 bushels of ear corn will hold of shelled corn or other grain 1,440 bushels.

Weights for Barn Use

Frequently the farmer wishes to feed a given weight of this, that or the other stuff and has no scales at hand to weigh it. If he has a quart measure handy, he can use it to measure out the required weight. The quart weight of various feeds is as follows:

Cottonseed meal, 1.5 pounds; linseed meal, old process, 1.1 pounds; gluten meal, 1.7 pounds; gluten feed, 1.2 pounds; wheat bran, coarse, .5 pound; wheat middlings, coarse, .8 pound and fine, 1.1 pounds; mixed wheat feed, .6 pound; cornmeal, 1.5 pounds; oats, 1.2 pounds; rye bran, .6 pound; H. O. dairy feed, .7 pound, and Victor corn feed, .7 pound per quart.

SILOS AND SILAGE

The silo is one of the true conservators of the nation's resources. Several state experiment stations have estimated that forty per cent of the value of the corn is in the stalks, almost all of which is saved if the latter are placed in a silo. The results have enabled stockmen and dairymen to keep more cattle on the same size farm, as well as maintain the herds in better health and increase the milk flow.

Silage is kept in the silo very much as fruit, vegetables and other kinds of human food are preserved in air-tight cans. The germs which cause fermentation can grow only when supplied with oxygen, and if air is kept from the silage it can be preserved for an indefinite period. As soon as the silo is filled fermentation begins, continuing until the supply of oxygen is exhausted. If the silage is well packed, and neither too green nor too ripe, it will continue to ferment for but a short time, and will be practically uniform below the top coating. The sweetness of the food depends upon the stage to which the fermentation is carried and the subsequent exclusion of air. Sour silage is not as wholesome as sweet silage nor will the cattle partake of it as freely. The best silage can be made only in a practically air-tight silo.

Some one has compared the difference between silage and dry feed to that, "between a juicy ripe apple and the green, dry fruit." Because of its succulence, silage has a beneficial effect on the digestion of the animals, and they become very fond of it. The economy of storing silage is a feature which appeals at once to the average farmer. Two and one-half to three tons of silage is equivalent in feeding value to a ton of hay, and may be stored in one-half to two-thirds of the space occupied by the latter. The Missouri Farmers' Bulletin No. 11 sums up the advantage of silage as follows:

1. Silage keeps young stock thrifty and growing all winter.
2. It produces fat beef more cheaply than does dry feed.
3. It enables cows to produce milk and butter more economically.
4. Silage is more conveniently handled than dry fodder.
5. The silo prevents waste of corn stalks which contain about one-third of the food value of the entire crop.
6. There are no aggravating corn stalks in the manure when silage is fed.
7. The silo will make palatable food of stuff which would not otherwise be eaten.
8. It enables a large number of animals to be maintained on a given number of acres.
9. It enables the farmer to preserve food which matures at a rainy time of the year when drying would be next to impossible.
10. It is the most economical method of supplying food for stock during the hot, dry periods in summer when the pasture is short.

In feeding silage it should always be taken off the top of the silo. If it were taken from the bottom, it would cause an opening which would admit air, and thus produce fermentation. If the silage is fed from the top just as soon as the silo is filled all loss due to fermentation is eliminated. In cases where the silage is not fed immediately after filling, it is necessary to remove and throw away, when feeding is begun, the shallow covering of spoiled silage. The silage must be fed off in layers of at least two inches each day to prevent formation of mold. In taking off silage when feeding, the object should be to leave the surface of the silage as level as possible in order to present the smallest possible surface to the air.

The capacity of the silo depends upon the number of cattle to be fed and the length of time that silage is required. This period usually lasts from 180 to 240 days, although very frequently silage is fed almost the entire year. The table on the next page indicates size of silo necessary to feed any number of cows from six to fifty. This table is based on the assumption that forty pounds of silage will be fed per head each day for a period of 180 days.

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The capacity of rectangular silos is easily figured, as it is only a case of multiplication. The capacity of round silos, however, is not as readily computed, so that the table below gives at a glance the approximate number of tons that can be stored in a round silo from 10 to 26 feet in diameter and from 20 to 32 feet deep.

Table Giving the Approximate Capacity in Tons of Cylindrical Silos for Well Matured Corn Silage

Depth of Silo— feet	Inside Diameter of Silo—Feet												
	10	12	14	15	16	18	20	21	22	23	24	25	26
20.....	26	38	51	59	67	85	105	115	127	138	151	163	177
21.....	28	40	55	63	72	91	112	123	135	148	161	175	189
22.....	30	43	59	67	77	97	120	132	145	158	172	187	202
23.....	32	46	62	72	82	103	128	141	154	169	184	199	216
24.....	34	49	66	76	87	110	135	149	164	179	195	212	229
25.....	36	52	70	81	90	116	143	158	173	190	206	224	242
26.....	38	55	74	85	97	123	152	168	184	201	219	237	257
27.....	40	58	78	90	103	130	160	177	194	212	231	251	271
28.....	42	61	83	95	108	137	169	186	204	223	243	264	285
29.....	45	64	88	100	114	144	178	196	215	235	256	278	300
30.....	47	68	93	105	119	151	187	206	226	247	269	292	315
31.....	49	70	96	110	125	158	195	215	236	258	282	305	330
32.....	51	73	101	115	131	166	205	226	248	271	295	320	346

Referring to the table below, it will be an easy matter to determine the size of the silo needed. This table is based on the assumption that 40 pounds of silage will be fed per head for a period of 180 days:

Number of Cows	Pounds Required Daily	Silage Consumed Yearly—Tons	Size of Silo Needed			Acreage Required at 15Tons per Acre
			Diameter Feet	Height Feet	Capacity Tons	
6	240	22	9	20	22	1.5
			10	16	22	1.5
9	360	33	10	24	34	2.4
			11	22	34	2.4
13	520	42	10	28	42	2.8
			10	30	47	3.0
15	600	54	12	26	55	3.7
			14	21	55	3.7
20	800	72	12	32	74	5.0
			14	26	74	5.0
25	1000	90	12	38	94	6.4
			14	30	91	6.1
30	1200	108	14	34	109	7.3
			15	31	110	7.4
35	1400	126	16	31	125	8.4
			14	38	128	8.6
40	1600	144	18	29	144	9.4
			16	34	143	9.3
45	1800	162	18	32	166	11.0
			16	38	167	11.1
50	2000	180	18	34	181	12.1
			16	40	180	12.0

Amount of Silage Fed Per Day

Kinds of Stock		Daily Rat'n Pounds
Beef Cattle—		
Wintering Calves, 8 months old.....		15 to 25
Wintering Breeding Cows.....		30 to 50
Fattening Beef Cattle 18-22 months old—		
First stage of fattening.....		20 to 30
Latter stage of fattening.....		12 to 20
Dairy Cattle.....		30 to 50
Sheep—		
Wintering Breeding Sheep.....		3 to 5
Fattening Lambs.....		2 to 3
Fattening Sheep.....		3 to 4

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IHC Tractor and Husker and Shredder

One acre out of every three that is plowed each year in the United States is planted to Indian corn. It is the crop that characterizes and sets apart the agriculture of this country from that of every other nation upon the globe. Its greater value per acre lies at the foundation of America's material prosperity.

Do you wonder that corn is King? Yet most farmers get only 63 per cent of what the crop is worth, because they practically waste the corn-stalks, which contain 37 per cent of the entire nutriment value.

Why not save 100 per cent of the corn crop value by using

I H C CORN MACHINES

Cut the corn with an I H C corn binder. If the crop is harvested before the leaves are dry and brittle, before frost and wind and rain have beaten out the valuable juices, you will save the other 37 per cent. Do not let it stand in the shock longer than is necessary. As soon as the sap is thoroughly dried, the stalks should be run through an

I H C HUSKER AND SHREDDER

and the stover should be blown into the mow to protect it against the damaging storms which usually arrive in the early autumn. I H C huskers and shredders are made in 2, 4, 6, 8 and 10-roll sizes. There is an I H C power, either portable or traction, just suited to each of these sizes, so that you can get an outfit profitable for individual work or a money maker for custom work.

In dairy sections the corn is cut with a corn binder just as soon as the ears are glazed and then hauled to the barn, where it is run through an ensilage cutter.

I H C OIL AND GAS ENGINES

furnish the best power for operating either huskers and shredders or ensilage cutters. In the corn belt many farmers are using I H C corn pickers, finding these machines cheaper than hand picking.

We suggest that you call on your local dealer for full information regarding I H C corn machines, or, write us direct.



IHC Corn Binder



IHC Corn Picker

IHC ALMANAC & ENCYCLOPEDIA

Rule for Measuring Corn

A heaped bushel contains 2748 cubic inches. To find the number of bushels of corn in a crib it is therefore necessary merely to multiply together the length, width and height in inches and divide the product by 2748. The number of bushels of shelled corn will be two-thirds of the quotient. If the sides of the crib are slanting, it will be necessary to multiply together one-half the sum of the top and bottom widths, the height and length.

Rule for Estimating Hay

Hay is often sold in the mow or stack where the weight has to be estimated. For this purpose 400 cubic feet of hay is considered a ton. The actual weight of 400 cubic feet of hay will vary according to the quality of the hay, time of cutting, position in the mow, etc. For making an estimate in a given case multiply together the length, breadth and height of the mow or stack in feet and divide the product by 400. The quotient will be the number of tons.

Average Periods of Incubation

Chickens.....	20-22 days	Guinea fowls.....	28 days
Geese.....	28-34 days	Pheasants.....	25 days
Ducks.....	28 days	Ostriches.....	40-42 days
Turkeys.....	27-29 days	Pigeons.....	18 days
Canary Birds.....	14 days		

Average Periods of Gestation

The period of gestation in animals varies considerably, but the following is an average period based on a long series of observations:

Ass.....	12 months	Pig.....	3½ months
Mare.....	11 months	Bitch.....	9 weeks
Cow.....	9 months	Cat.....	8 weeks
Sheep.....	5 months	Rabbit.....	30 days
Goat.....	5 months	Guinea pig.....	65 days

Practical Measurement of Land

To find the number of acres in any rectangular piece of land, multiply the length and breadth in rods together, and divide by 160 (the number of square rods in an acre), and the result will be the required answer.

When one side and perpendicular to that side from the opposite angle are given, take one-half the product of the side and perpendicular, and divide by 160.

When three sides are given, from half the sum of the three sides subtract each side separately; multiply the half sum and the three remainders together; the square root of the product divided by 160 will give the number of acres in the field.

When the piece of land is in the shape of a trapezoid, take one-half the product of the sum of the parallel sides and the perpendicular between those sides, and divide by 160.

To find the area of any straight-sided piece of land, divide the latter into convenient parts, find the area of every part, and the sum will be the area of the field.

In general, the parts into which the field can be most conveniently divided will be triangles, but in some cases we may have a rectangle or a trapezoid, whose areas may be found by the preceding rules. The area of a right-angle triangle equals one-half the product of the two short sides.

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Advantages of the Individual Threshing Outfit

The individual threshing outfit is becoming more popular every year, and for a very good reason. Custom threshers are not finding their work as profitable as in former years. Consequently, they are not keeping up their outfits to the highest point of efficiency. The result is that there is often a serious loss of grain which goes into the straw stack. Besides this loss,



An IHC Threshing Outfit

the annoyance and the danger of loss through waiting for the custom thresher are too great to be overlooked. The farmer grows only one crop a year. He harvests in time, and gets it safely into the shock. Then, if he must wait for the custom thresher and take the chance of the grain rotting in the shock or deteriorating through exposure to the weather, he runs the risk of showing a loss as the result of his year's work.

The best way to fortify against a loss of this kind is to own a thresher of just the right capacity to meet your individual needs. No matter whether you have a small acreage devoted to grain or a large one, you will find in the I H C line of threshers the size just adapted to your needs. Small threshers of the barn floor type, or mounted on a truck and operated by a 6 or 8-horse power engine, are proving very popular in many of our eastern and southern states. Then there are medium-sized machines for the average farm, and large threshers for big farms and custom work.

One of the advantages of using an I H C thresher is the fact that you can get an I H C power of just the right size for your outfit. I H C engines from 1 to 50-horse power, in skidded, portable, or tractor styles, have been used extensively in every section of the country as a threshing power, and have made good in every instance.

We suggest that you call on your local I H C dealer for information regarding I H C threshers and engines, or, if you desire, write us direct for catalogues and other information.

**Threshing
Soy Beans with
a small IHC
Thresher and
IHC Gasoline
Engine moun-
ted on portable
truck**



IHC ALMANAC & ENCYCLOPEDIA

Helpful Hints About Concrete Work and Cement

Courtesy Information Bureau, Universal Portland Cement Company

Cement—Sacks

Portland cement is generally put up in cloth sacks, but occasionally in paper sacks and wooden barrels. Cloth sacks are superior to paper sacks or barrels, and although cement manufacturers charge more for this kind of a package, a rebate is allowed for the return of the empty sacks in good order. One barrel of Portland cement contains 4 sacks weighing 94 pounds each, and containing 1 cubic foot.

Storing Cement

Cement must be stored in a dry place, preferably on a mat of boards laid on the floor, and should be covered with heavy paper or canvas. Cement exposed to moisture becomes lumpy and is unsuitable for use.

Sand and Gravel

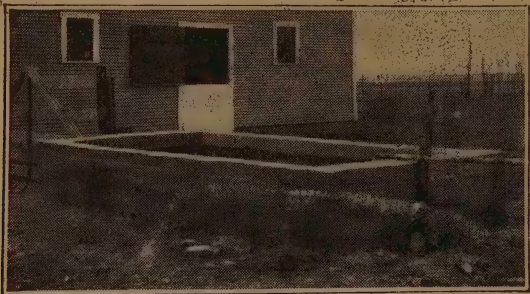
The aggregates must be clean, coarse, hard, durable, and well graded. Clean, because if the sand grains or pieces of gravel or stone are covered with a coating or film of clay, stone dust, or other materials, the cement cannot form a bond with the sand, gravel, or stone, and the strength of the concrete can never exceed the strength of the bond between the cement and the aggregate. One of the points to be observed in making good mortar or concrete is to get every particle of sand covered with cement and every particle of gravel or crushed stone covered with the cement mortar.

Unscreened Gravel

It is not advisable to use bank run gravel as a substitute for coarse sand and screened gravel unless the proportions of fine and coarse materials are definitely known. In the great majority of cases, bank run gravel cannot be relied upon for best results, but should be shoveled through a $\frac{1}{4}$ -inch screen, the material passing through being used as sand and that remaining as stone. When using unscreened gravel in place of sand and coarse aggregate, replace the sand and coarse aggregate specified by a volume of unscreened gravel equal to that of the coarse aggregate alone; that is, for the equivalent of a 1:2:4 or 1:2 $\frac{1}{2}$:5 or 1:3:6 mixture, use 4, 5, or 6 parts respectively of unscreened gravel. This statement is based on the assumption that the unscreened gravel contains twice as much coarse as fine material.



Concrete Hog House and Feeding Floor



Concrete Watering Trough

Measuring Materials

Sand and gravel may be measured by the wheel-barrow load, or by means of a measuring box (without top or bottom) of known size. Cement should be measured by the sack, or by weight, and not by the box or shovelful, as it "fluffs" on leaving the sacks, occupying 15% to 25% additional space.

Amount of Materials to Mix

Never mix a quantity of materials requiring less than one sack of cement. Never mix up more concrete at a batch than can be placed in position within 30 minutes after it is first wet.

Concrete Blocks

Hollow concrete building blocks are made in a variety of sizes, but blocks 15¾ inches long, 7¾ inches high, and 8 inches thick are considered standard. Such blocks surrounded by a layer of mortar ¼ inch thick occupy a space 16 inches long, 8 inches high, and 8 inches wide in the wall, covering an area of 8-9 square foot.

Mixture for General Concreting and Body of Concrete Blocks

Proportions for Body of Block	Cu. ft. of sand and stone per bbl. of cement			Quantities of Materials necessary for 1 cu. yd. of concrete			Quantities of Materials necessary for 100 8"x8"x 16" standard concrete blocks allowing 33% for air space		
	Bbbs. of Cement	Cu. ft. Sand	Cu. ft. Stone	Bbbs. of Cement	Cu. yds. Sand	Cu. yds. Stone	Bbbs. of Cement	Cu. yds. Sand	Cu. yds. Stone
1:2 :4	1	8	16	1.51	.45	.89	2.20	.66	1.30
1:2½ :4	1	10	16	1.39	.51	.82	2.04	.75	1.20
1:2¾ :5	1	10	20	1.24	.46	.92	1.81	.68	1.35
1:3 :5	1	12	20	1.16	.52	.86	†	....	....
1:3	1	12	..	2.25	1.00	....	3.3	1.46	....

Mixtures for Mortars and Concrete Block Facings

Proportions for Facing	Cu. ft. of sand per bbls. of cement.		Quantities of Materials necessary for 1 cu. yd. of concrete		Quantities of Materials necessary for facing 100 8"x8"x16" standard block	
	Bbbs. of Cement	Cu. ft. of Sand	Bbbs. of Cement	Cu. ft. of Sand	Bbbs. of Cement	Cu. ft. of Sand
*1:1½	1	6	3.86	23.2	.53	3.20
*1:2	1	6	3.1	25.1	.43	3.45

*Based on facing used in surface layer ½ inch thick.
†1:3:5 mixture is not suitable for concrete blocks.

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Care of Farm Machines

By Maurice Kane

Manager of Experiments, International Harvester Company

This question is of considerable importance to the farmers of the present day, owing to the large amount of machinery used on the farm. In considering this question we will start with new machines. The important thing to look out for is that the nuts are kept tight so that all the parts will be kept in proper operative relation to each other.

Next in importance is the use of good oil for lubricating the moving parts. This matter requires some discretion so as to not waste oil or time. It is quite common for the ordinary operator to squirt oil into all oil holes, especially the ones that are most convenient, regardless of whether those parts need frequent oiling or not. As only about half of the parts on binders or mowers need frequent oiling and then only in such quantity as will be retained by the bearing, the overflow does no good. When a bearing is neglected and the parts get hot, and cutting takes place between the shaft and its bearing, and it is not convenient to take the parts out to smooth them off, a little graphite mixed with the oil will be quite beneficial.

When you are through using your machines for the season they should be properly housed. Before putting them away the polished parts should be greased to prevent rust. This would include the knottor and sickle on the binder and the knives on the mower. This would also apply to all other implements used on the farm such as cultivators, disk harrows, plows, etc. When the binder is put away, the canvases should be removed and hung up in the tool shed or barn. A very common practice in connection with the canvases is to fold them up. This is not a good plan, as experience has shown, on account of mice making their headquarters there during the winter and in many cases damaging the canvas.

After machines have been used for some time they should be gone over carefully and the worn parts adjusted and put in order. This work should be done before starting on next season's work; when the grain is ripe and grass fit to cut, you will not have time to do a good job of repairing. On your mower it is very important that looseness at both ends of the pitman be taken care of and that the guards be in proper alignment. Those are the most important points in connection with mowing machines. By alignment of guards, we do not mean the points of the guards; we refer to that portion through which the knife sections work. To line up the guards, take a piece of fine string, connect to the inner and outer shoes, letting it bear on the ledger plates about midway between front and rear. Draw this string tight and you can easily see if the guards are in line with the shoe plates. As the guards are made of malleable iron they will stand bending up or down to bring them in proper alignment with the shoe plates.

The less attention you pay to matters of this kind the better it is for the manufacturer, as you will need more machines and repairs.

For the protection of farmers, the I H C trade-mark is put on machines and parts. Whether you need a new machine, or just a knife section, pitman strap, or some other part, look for the I H C trade-mark; it guarantees a perfect fit and first-class material.



At thousands of local agencies throughout the world, these repairs are always carried in stock, so that a new piece can be obtained on short notice.



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Who Pays for Your Cows' Feed?

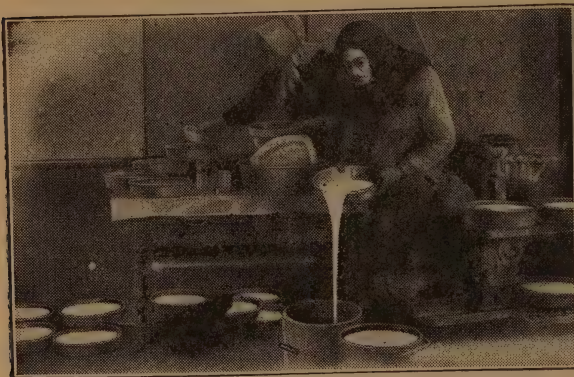
You do, of course, but the point is this: Do you get out of the feed all that it is worth? If a man came along the road and offered you 25 cents a bushel for your corn when the market price was 60 cents, or offered you

\$10.00 a ton for hay when hundreds of people were willing to pay you \$20.00 a ton for that hay, you would turn him down quick. You know what your farm products are worth on the market and you do not figure on selling them to anyone for half that price.

You ought to apply that same kind of reasoning when you feed your hay, corn and other grain to your milk cows. Consider your cows as pur-

chasers of your farm products. There are hundreds of men who are feeding their farm crops to cows and not getting anywhere near the profit they should. Then there are others who are getting rich. The whole thing is a matter of getting all the butter fat the cows produce from the feed you give them.

There is only one certain way to get the full value of the milk your cows produce, from the feed you pay for, and that is to run the milk through a cream separator. The Purdue Experiment Station reports that results from the deep-setting method of skimming show a loss of 10.1 pounds of butter fat per year per cow; the shallow pan method, a loss of 26.2 pounds; and the water dilution method, a loss of 40.5 pounds. Which of these methods are you using? How much are you losing? Multiply the above figures by the number of cows you milk. That will tell the story. Any man who milks cows needs a cream separator, and he needs a good one too. It always pays to buy a first-class machine, and in no place is this more true than when applied to cream separators. I H C cream separators are close skimmers and are built to last, and at the same time are easy to clean and easy to turn. We cannot give you all the reasons here, but ask that you send for a catalogue which describes these machines in detail. Or, better still, go to the nearest I H C dealer who handles these machines and examine one. I H C cream separators are made in three styles—Bluebell, Dairymaid, and Lily—each in four sizes.



The Old Way—With Pots, Pans and Kettles



The Modern Way—
With an I H C Cream Separator

IHC ALMANAC & ENCYCLOPEDIA

When to Plant Seeds

The seeds listed below are divided into two classes according to the temperature at which they will germinate and can be safely planted.

Class I. includes seeds that will sprout in an average temperature of 45 degrees in the shade, which is about the temperature at the time peach and plum trees blossom.

Class II. includes those seeds which will germinate at an average temperature of 60 degrees in the shade, the temperature about the time when the apple trees bloom.

Class I.					
Beet	Red clover	Parsnip	Radish	Carrot	Endive
Oats	Crimson	Onion	Turnip	Cabbage	Kale
Rye	clover	Pea	Spinach	Cauliflower	Lettuce
Wheat	Grasses	Barley	Parsley		

These can be planted with safety in the spring as soon as the ground can be prepared, and some of them, if planted in the fall, live through the winter.

Class II.				
Alfalfa	Cotton	Cucumber	Pepper	String bean
Cowpea	Egg plant	Pumpkin	Soy bean	Melon
Corn	Squash	Tomato	Pole bean	Okra

Usual Weights per Bushel of Seed

Kind of Seed	Pounds per Bushel	Kind of Seed	Pounds per Bushel	Kind of Seed	Pounds per Bushel
Alfalfa.....	60	Flat pea.....	50-60	Peanut.....	20-30
Amber cance....	45-60	Flax.....	48-56	Rape, winter...	50-60
Bent grass		Hemp.....	40-60	Redtop	
Creeping.....	15	Japan clover		Chaff.....	10-14
Rhode Island.	15	Hulled.....	60	Fancy.....	25-40
Bermuda grass	15	Unhulled....	18-25	Rescue grass..	12-28
Bird's-foot clover	60	Johnson grass..	14-28	Rice.....	43-45
Bitter vetch....	60	Kaffir corn....	50-60	Rye grass	
Blue grass		Lentil.....	60	English.....	28
Canada.....	14-20	Lupine, white..	50-60	Italian.....	12
Kentucky....	14-30	Meadow foxtail	7-14	Sainfoin.....	14-32
Texas.....	14	Meadow grass		Serradelia....	28-36
Broad bean.....	50-60	Fowl.....	11-14	Soy bean.....	58-60
Brome, awnless.	10-14	Rough-stalked	14-20	Spelt.....	40-60
Broom corn....	45-60	Wood.....	14-24	Sunflower.....	24-50
Burr clover		Millet		Sweet clover	
Hulled.....	60	Barnyard....	30-60	Hulled.....	60
Unhulled....	8-10	Broom corn..	45-60	Unhulled....	33
Spotted.....	60	Common.....	48-50	Sweet corn (ac-	
Castor bean....	46-60	German.....	48-50	cording to va-	
Clover		Golden Won-		riety).....	36-56
Alsike.....	60	der.....	48-50	Sweet vernal,	
Crimson.....	60	Hungarian...	48-50	perennial....	6-15
Egyptian....	60	Pearl.....	48-56	Teosinte.....	40-60
Mammoth...	60	Milo maize....	50-60	Timothy.....	45
Red.....	60	Oat grass		Velvet bean....	60
White.....	60	Tall.....	10-14	Vetch	
Cowpea.....	56-60	Yellow.....	7-14	Hairy.....	50-60
Crested dog's tail	14-30	Orange cane....	45-60	Spring.....	60
Fescue		Orchard grass ..	10-18	Water grass,	
Hard.....	12-60	Pea		large.....	14
Meadow.....	14-24	Field.....	60	Wild rice.....	15-28
Red.....	12-15	Garden,		Yellow trefoil..	60
Sheep's.....	16	smooth....	60		
Tall.....	14-24	Garden,			
Various leaved	15	wrinkled...	56		

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Advantages of Feeding Ground Grain

A prominent authority on the subject of grinding feed for stock, says: "A careful study of the experiments conducted by the various experiment stations under a variety of conditions, and with different classes of stock, has invariably shown that it required less ground grain to produce a given amount of milk, meat, or work than it does when whole or unground grain is used. In some instances the difference is very wide—as high as 35 per cent being saved by grinding, while in other instances the difference is not very marked. Averaging up the results of all the tests reported, we find that there is a saving of about 12 per cent effected by grinding feed for the various classes of animals."

It Also Pays to Grind Corn Cobs

The following is an analysis of corn and cobs under the signature of H. E. Wiley, United States Agricultural Chemist, at Washington, D. C.:

	Cobs	Kernels
Water.....	9.33 per cent.	10.49 per cent.
Ash.....	1.33 per cent.	1.55 per cent.
Oil.....	.47 per cent.	5.49 per cent.
Carbohydrates.....	56.01 per cent.	67.72 per cent.
Crude Fibre.....	30.36 per cent.	2.13 per cent.
Albuminoids.....	2.50 per cent.	10.62 per cent.

The analysis shows that corn cobs are valuable as feed, and should be utilized in connection with the kernels which grow upon them.

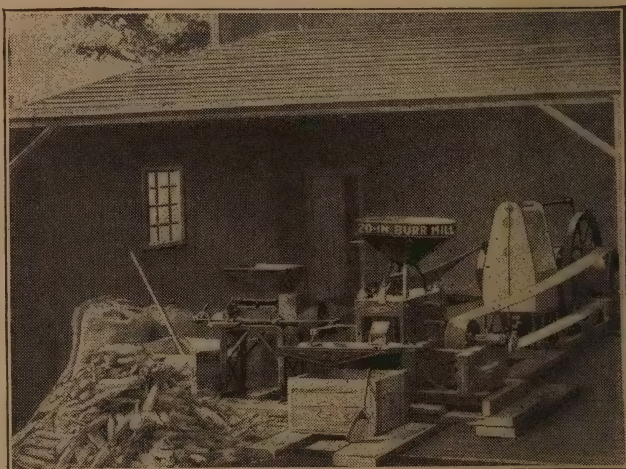
The I H C line of feed grinders includes types for practically all grinding purposes.

Farmers wishing to grind small grain, such as wheat, oats, barley, shelled corn, etc., will find that the Type C small grain grinder, made with 6 or 8-inch grinding plates, will amply meet requirements.

Where the grinder is to be used for grinding corn in the husk, we suggest the I H C Type D grinder, which is furnished with 8-inch grinding plates.

For the average farmer as well as the large stockman, the Type B Mill will be found most desirable. This mill is made with 6, 8 and 10-inch grinding plates.

In addition to these steel plate mills, the I H C line includes Meadows White Flint Granite Mills, made with 12, 16, 20, 24 and 30-inch plates. These mills are extensively used in the south, where they have a reputation for making the best corn meal. They will also make the highest grade graham and buckwheat flour. When



An I H C Famous Engine belted up to an I H C Feed Grinder and 20-inch Meadows Burr Mill, ready for any kind of grinding

the flour bolter, an excellent grade of old time burr flour can be made. Meadows Mills have a reputation for producing more meal and less bran than any other mill on the market, making at least 95 per cent meal.

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Length of Germ Life in Various Seeds

Vegetables	Years	Vegetables	Years	Vegetables	Years
Cucumber.....	8 to 10	Mustard.....	3 to 4	Parsley.....	2 to 3
Melon.....	8 to 10	Okra.....	3 to 4	Parsnip.....	2 to 3
Pumpkin.....	8 to 10	Rhubarb.....	3 to 4	Pepper.....	2 to 3
Squash.....	8 to 10	Spinach.....	3 to 4	Tomato.....	2 to 3
Cauliflower.....	5 to 6	Turnip.....	3 to 6	Egg Plant.....	1 to 2
Artichoke.....	5 to 6	Asparagus.....	2 to 3		
Endive.....	5 to 6	Beans.....	2 to 3		
Pea.....	5 to 6	Carrots.....	2 to 3	Herbs	Years
Radish.....	4 to 5	Celery.....	2 to 3	Anise.....	3 to 4
Beets.....	3 to 4	Corn (on cob).....	2 to 3	Caraway.....	2
Cress.....	3 to 4	Leek.....	2 to 3	Summer Savory.....	1 to 2
Lettuce.....	3 to 4	Onion.....	2 to 3	Sage.....	2 to 3

Time Required for Garden Seeds to Germinate

	Days		Days		Days
Bean.....	5 to 10	Corn.....	5 to 8	Parsnip.....	10 to 20
Beet.....	7 to 10	Cucumber.....	6 to 10	Pepper.....	9 to 14
Cabbage.....	5 to 10	Endive.....	5 to 10	Radish.....	3 to 6
Carrot.....	12 to 18	Lettuce.....	6 to 8	Tomato.....	6 to 12
Cauliflower.....	5 to 10	Onion.....	7 to 10	Turnip.....	4 to 8
Celery.....	10 to 20	Pea.....	6 to 10		

Quantity of Seeds Necessary to Sow an Acre

Asparagus.....	5 lbs.	Cress, water.....	3 lbs.	Parsnip.....	6 lbs.
Beans, dwarf.....	1½ bus.	Cress, upland.....	3 lbs.	Peas.....	2 bus.
Beans, pole.....	12 qts.	Egg Plant.....	*1 oz.	Potato (cut tubers)	8 bus.
Beet.....	6 lbs.	Grass.....	4 bus.	Pumpkin.....	5 lbs.
Buckwheat.....	1 bu.	Kale, or sprouts.....	4 bus.	Radish.....	10 lbs.
Cabbage.....	¼ bu.	Lettuce.....	*1 oz.	Rye.....	1½ bus.
Carrot.....	4 lbs.	Melon, musk.....	3 lbs.	Sage.....	10 lbs.
Cauliflower.....	*1 oz.	Melon, water.....	5 lbs.	Spinach.....	12 lbs.
Celery.....	*½ oz.	Mustard.....	½ bu.	Squash, bush.....	6 lbs.
Clover.....	16 lbs.	Onion.....	6 lbs.	Squash, running.....	4 lbs.
Clover, crimson.....	16 lbs.	Onion seed for sets	30 lbs.	Tomato.....	¼ lb.
Corn.....	10 qts.	Onion sets.....	12 bus.	Turnip.....	2 lbs.
Cowpea.....	2 bus.	Orchard grass.....	30 lbs.	Vetch.....	1 bu.
Cucumber.....	2 lbs.				

*Per 1000 plants

Length of Time Trees and Bushes Will Bear

	Years		Years		Years
Apple.....	25 to 40	Gooseberry.....	20	Plum.....	20 to 25
Blackberry.....	6 to 14	Peach.....	8 to 12	Raspberry.....	6 to 12
Currant.....	20	Pear.....	50 to 75	Strawberry.....	1 to 3

Usual Distance for Planting Trees

	No. feet each way		No. feet each way		No. feet each way
Apples.....	30 to 40	Plum.....	16 to 20	Apricots.....	16 to 20
Apples, dwarf.....	10 to 15	Peaches.....	16 to 20	Nectarines.....	16 to 20
Pears.....	20 to 30	Cherries.....	16 to 25	Quinces.....	8 to 14
Pears, dwarf.....	10 to 15				

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Weights and Measures Used in the United States

Troy Weight

24 grains.....	1 pwt.
20 pwt.....	1 ounce
12 ounces.....	1 pound

Used for weighing gold, silver, and jewels.

Apothecaries' Weight

20 grains.....	1 scruple
3 scruples.....	1 dram
8 drams.....	1 ounce
12 ounces.....	1 pound

The ounce and pound in this are the same as in Troy Weight.

Avoirdupois Weight

27 $\frac{1}{32}$ grains.....	1 dram
16 drams.....	1 ounce
16 ounces.....	1 pound
25 pounds.....	1 quarter
4 quarters.....	1 cwt.
2,000 pounds.....	1 short ton
2,240 pounds.....	1 long ton

Dry Measure

2 pints.....	1 quart
8 quarts.....	1 peck
4 pecks.....	1 bushel
36 bushels.....	1 chaldron

Liquid Measure

4 gills.....	1 pint
2 pints.....	1 quart
4 quarts.....	1 gallon
31 $\frac{1}{2}$ gallons.....	1 barrel
2 barrels.....	1 hogshead

Square Measure

144 square inches.....	1 sq. foot
9 square feet.....	1 sq. yard
30 $\frac{1}{4}$ square yards.....	1 sq. rod
40 square rods.....	1 rood
4 roods.....	1 acre
640 acres.....	1 sq. mile

Time Measure

60 seconds.....	1 minute
60 minutes.....	1 hour
24 hours.....	1 day
7 days.....	1 week
28, 29, 30, or 31 days	1 calendar month
(30 days..1 month in computing interest.)	
365 days.....	1 year
366 days.....	1 leap year

Circular Measure

60 seconds.....	1 minute
60 minutes.....	1 degree
30 degrees.....	1 sign
90 degrees.....	1 quadrant
4 quadrants, 12 signs, or 360 degrees.....	1 circle

Long Measure

12 inches.....	1 foot
3 feet.....	1 yard
5 $\frac{1}{2}$ yards.....	1 rod
40 rods.....	1 furlong
8 furlongs.....	1 statute mile
3 miles.....	1 league

Cloth Measure

2 $\frac{1}{4}$ inches.....	1 nail
4 nails.....	1 quarter
4 quarters.....	1 yard

Paper Measure

24 sheets.....	1 quire
20 quires.....	1 ream (480 sheets)
2 reams.....	1 bundle
5 bundles.....	1 bale

Surveyor's Measure

7.92 inches.....	1 link
25 links.....	1 rod
4 rods.....	1 chain
10 sq. chains or 160 sq. rods.....	1 acre
640 acres.....	1 sq. mile
36 sq. miles (6 miles square).....	1 township

Cubic Measure

1,728 cubic in.....	1 cubic foot
27 cubic ft.....	1 cubic yard
128 cubic ft.....	1 cord (wood)
40 cubic ft.....	1 ton (shipping)
2,150.42 cubic in.....	1 standard bu.
231 cubic in.....	1 standard gal.
1 cubic ft.....	about 4-5 of a bu.

Mariner's Measure

6 feet.....	1 fathom
120 fathoms.....	1 cable length
7 $\frac{1}{2}$ cablelengths.....	1 mile
5,280 feet.....	1 statute mile
6,085 feet.....	1 nautical mile

Miscellaneous

3 inches.....	1 palm
4 inches.....	1 hand
6 inches.....	1 span
18 inches.....	1 cubit
21.8 inches.....	1 Bible cubit
2.5 feet.....	1 military pace

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Simple Interest Table

NOTE—To find the amount of interest at $2\frac{1}{2}$ per cent on any given sum, divide the amount given for the same sum in the table at 5 per cent by 2; at $3\frac{1}{2}$ per cent divide the amount at 7 per cent by 2, etc.

Time		1 day	2 days	3 days	4 days	5 days	6 days	7 days	8 days	9 days	10 days	20 days	1 mo.	2 mos.	3 mos.	4 mos.	5 mos.	6 mos.	1 year
Amt.	Interest																		
\$1	3.														1	1	1	1	3
	4.														1	2	2	2	4
	5.														1	2	2	3	5
	6.												1	1	1	2	2	3	7
\$2	7.											1	1	1	1	2	3	4	
	3.													1	1	2	2	3	6
	4.											1	1	1	2	2	3	4	8
	5.											1	1	2	3	3	4	5	10
\$3	6.											1	1	2	3	4	5	6	12
	7.										1	1	2	3	5	6	8	9	18
	3.												1	1	2	3	4	5	9
	4.											1	1	2	3	4	5	6	12
\$4	5.											1	1	2	3	4	5	6	8
	6.											1	1	2	3	5	7	8	10
	7.											1	1	2	4	6	8	10	20
	3.												1	1	2	3	4	5	6
\$5	4.												1	2	3	4	5	6	8
	5.												1	2	4	6	8	10	15
	6.												1	2	5	8	10	13	25
	7.												1	2	6	9	12	15	35
\$10	3.													1	2	3	4	5	8
	4.													1	2	3	5	7	15
	5.													1	2	4	6	8	20
	6.													1	2	5	8	10	30
\$25	7.													1	2	6	10	15	50
	3.														1	1	1	1	30
	4.														1	1	1	1	40
	5.														1	1	1	1	50
\$50	6.														1	1	1	1	75
	7.														1	1	1	1	100
	3.															1	1	1	150
	4.															1	1	1	200
\$100	5.															1	1	1	250
	6.															1	1	1	300
	7.															1	1	1	400
	3.																1	1	500

Compound Interest on One Dollar

Years	3	4	5	6	7
1.....	1.03	1.04	1.05	1.06	1.07
1½.....	1.04	1.06	1.07	1.09	1.10
2.....	1.06	1.08	1.10	1.12	1.14
2½.....	1.07	1.10	1.13	1.15	1.18
3.....	1.09	1.12	1.15	1.19	1.22
3½.....	1.10	1.14	1.18	1.22	1.27
4.....	1.12	1.17	1.21	1.26	1.31
4½.....	1.14	1.19	1.24	1.30	1.36
5.....	1.16	1.21	1.28	1.34	1.41
5½.....	1.17	1.24	1.31	1.38	1.45
6.....	1.19	1.26	1.34	1.42	1.51
6½.....	1.21	1.29	1.37	1.46	1.56
7.....	1.23	1.31	1.41	1.51	1.61
7½.....	1.24	1.34	1.44	1.55	1.67
8.....	1.26	1.37	1.48	1.60	1.73
8½.....	1.28	1.39	1.52	1.65	1.79

Years	3	4	5	6	7
9....	1.30	1.42	1.55	1.70	1.85
9½.	1.32	1.45	1.59	1.75	1.92
10....	1.34	1.48	1.63	1.80	1.98
100....	19.25	50.50	131.50	340.00	868.00

WHEN MONEY DOUBLES AT INTEREST

Interest				Interest			
Simple		Comp'd		Simple		Comp'd	
Rate	Years	Years	Rate	Years	Years	Rate	Years
1.....	100.00	69.66	4 1/2.....	22.22	15.75		
1 1/2.....	66.66	46.56	5.....	20.00	14.21		
2.....	50.00	35.00	5 1/2.....	18.18	12.94		
2 1/2.....	40.00	28.07	6.....	16.67	11.90		
3.....	33.33	23.45	6 1/2.....	15.38	11.00		
3 1/2.....	28.57	20.15	7.....	14.29	10.24		
4.....	25.00	17.67	7 1/2.....	13.33	9.58		

How to Select a Wagon and Difficulties Which Confront the Purchaser

There are conditions confronting the wagon purchaser that did not exist fifteen or twenty years ago. Look about your own farm, and, if you are not a prairie dweller, you will remember well the gigantic oaks and the great number of black hickories that used to be there. They either have died and been cut down, or the worms have destroyed their strength. The wood supply is getting shorter every year, and there is more tendency to use second grade stock. It is only a few of the better equipped and far-sighted wagon manufacturers that have fortified themselves against these conditions. These manufacturers bought immense tracts of timber for future use, and as a result are still building wagons of the highest grade. Many have gone a step farther and are now using steel for the heavier parts, such as the axles, hounds and bolsters.

To meet the demands for wagons—both wood and steel—the I H C line includes the Weber and Columbus wood gear wagons, Steel King and New Bettendorf steel gear wagons. In the Weber, the toughest hickory and oak are used in the gears and wheels. Columbus wheels have birch hubs, otherwise, the same kind of material is used as in the Weber. All material used in these wagons is carefully air-dried and seasoned for a sufficient period of time to insure toughness and resilience.

All material is carefully inspected, so that knotty, cross grained, brash, water-logged timber is not used in I H C wagons. These wagons are sold with or without a box. They are well ironed. If a box is wanted, one having the finest long leaf yellow pine bottom and yellow or bay poplar sides can be furnished.

Steel King and New Bettendorf wheels are made of the same material used in the Weber. Remember—the Steel King is the only wagon having a perfectly adjustable stake. It is also equipped with removable cast skeins.

New Bettendorf wagons have steel gears, the axles being equipped with removable malleable sleeves which make the arms practically everlasting. An extension reach box makes it easy to lengthen the gear and does away with the necessity of carrying an extra reach.



I H C wagons are built to carry heavy loads on all roads

IHC Wagons Warranted

Examine an I H C wagon, then you will understand why we can protect purchasers with an iron-clad warranty against any breakage due to defective workmanship or material, which may occur within a year. Every point which you would expect to find on a farm wagon built to your order is embodied in I H C wagons. The good old standard of wagon construction which admitted no deception or substitution still obtains in I H C wagon factories.

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Information for Builders

Wood and Lumber

A cord of wood contains 128 cubic feet. To ascertain how many cords there are in a pile of wood, multiply the length by the height, and that by the width, and divide the product by 128.

One-fifth more siding and flooring is needed than the number of square feet of surface to be covered, because of the lap in the siding and matching.

To measure round timber, take the girth in inches at both large and small ends, add them, divide by 2, which gives the mean girth; then multiply the length in feet by the square of one-fourth of the mean girth and the product will be the contents in cubic feet. This rule is commonly adopted, and gives four-fifths of the true contents, one-fifth being allowed to the purchaser for waste in sawing.

One thousand laths will cover 70 yards of surface, and 11 pounds of lath nails will nail them on. Eight bushels of good lime, 16 bushels of sand, and 1 bushel of hair will make enough good mortar to plaster 100 square yards.

Covering Capacity of Shingles

Average size of shingles—4 x 16 inches—is taken as a basis of calculation.

100 sq. ft. will require, laid 4 inches to the weather.....900

100 sq. ft. will require, laid 4½ inches to the weather.....800

100 sq. ft. will require, laid 5 inches to the weather.....720

Three and one-half pounds of four-penny nails are required for laying 1,000 shingles.

5 to 10 per cent should be added to these figures for waste and shortage.

Stone and Brick Walls

A perch of stone is 24.75 cubic feet. When built in the wall, 2¾ cubic feet are allowed for the mortar and filling; hence, 22 cubic feet of stone make one perch of wall.

Masons estimate 3 pecks of lime and 4 bushels of sand to a perch of wall.

To find the number of perches of stone in a wall, multiply together the length, height, and thickness in feet, and divide by 22.

Common bricks are 7¼ to 8 inches long by 4¼ inches wide and 2½ inches thick. Front bricks are ¼ inch longer and wider.

It requires 20 common bricks to lay one cubic foot. In an 8-inch wall 15 common bricks make one foot of wall.

One and one-eighth barrels of lime and ⅝-yard of sand will lay 1,000 common brick.

One mason and helpers (at the rate of 1¼ helpers to each mason) will lay, in one day of ten hours, 1,800 to 2,000 common brick.

Stone foundation walls for elevators, etc., should not be less than 16 inches thick. A thinner wall does not bond together well. All foundation walls should be at least 8 inches thicker than that portion of the wall above grade.

Do not use more mortar than necessary, as it is obvious that stone is the stronger of the two materials. Do not lay the stone vertically, but on its natural quarry bed. Otherwise, water will easily penetrate between the layers. For all damp places, cement mortar, or, lime and cement mortar, should be used.

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Interest and Statute of Limitations

State	Interest		Limitations			State	Interest		Limitations		
	Legal rate	By contract	Judgments	Notes	Accounts		Legal rate	By contract	Judgments	Notes	Accounts
	%	%	Yrs.	Yrs.	Yrs.		%	%	Yrs.	Yrs.	Yrs.
Alabama....	8	8	20	*6	3	Montana....	8	Any	10	8	3
Arkansas....	6	10	10	5	3	Nebraska....	7	10	5	5	4
Arizona....	6	Any	5	4	3	Nevada....	7	Any	6	6	4
California....	7	Any	5	4	2	N. Hamp....	6	6	20	6	6
Colorado....	8	Any	20	6	6	N. Jersey....	6	6	20	6	6
Connecticut.	6	6	†	†	6	N. Mexico....	6	12	7	6	4
Delaware....	6	6	—	—	3	New York....	6	6	20	6	6
Dist. of Col.	6	10	12	3	3	N. Carolina..	6	6	10	*3	3
Florida....	8	10	20	5	2	N. Dakota....	7	12	10	6	6
Georgia....	7	8	7	6	4	Ohio....	6	8	5	15	6
Idaho....	7	12	6	5	4	Oklahoma....	7	12	1	5	3
Illinois....	5	7	20	10	5	Oregon....	6	10	10	6	6
Indian Ter..	6	10	—	—	—	Pennsylvania	6	6	5	6	6
Indiana....	6	8	¶10	10	6	Rhode Island	6	Any	20	6	6
Iowa....	6	8	20	10	5	S. Carolina...	7	8	10	6	6
Kansas....	6	10	5	5	3	S. Dakota....	7	12	10	6	6
Kentucky....	6	6	15	15	*5	Tennessee...	6	6	10	6	6
Louisiana...	5	8	10	5	3	Texas....	6	10	10	4	2
Maine....	6	Any	20	†6	6	Utah....	8	Any	8	6	4
Maryland...	6	6	12	3	3	Vermont....	6	6	8	†6	6
Mass....	6	Any	20	6	6	Virginia....	6	6	20	5	2
Michigan....	5	7	6	6	6	Washington..	6	12	6	6	3
Minnesota...	7	10	10	6	6	W. Virginia..	6	6	10	10	3
Mississippi..	6	10	7	6	3	Wisconsin....	6	10	20	6	6
Missouri....	6	8	10	10	5	Wyoming....	8	12	5	5	8

*Under seal, 10 %. †No law. ‡Negotiable notes, 6%; non-negotiable, 17%. —Varies by counties. ¶Real estate, 20%. ††Under seal, 12%. ††Under seal, 14%.

Days of grace on notes and drafts are given in the following states and territories; Alabama, Arkansas, South Dakota, Georgia, Indian Territory, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Mexico, North Carolina, Oklahoma, South Carolina, Texas, and Wyoming.

A Measurement Table for Lumber.

Here is a simple and complete table for obtaining the number of feet in a bill of lumber. The top line gives the length of the piece of lumber in feet. The first column to the left gives the dimensions in inches. The remaining columns show the number of board feet in the piece. For example: A piece of lumber 2x4x10=7 feet; 2x4x12=8 feet; 2x10x18=30 feet; 2x14x18=42 feet; 8x8x24=128 feet.

	10	12	14	16	18	20	22	24	26	28	30	32
2x 4	7	8	9	11	12	13	15	16	17	19	20	21
2x 6	10	12	14	16	18	20	22	24	26	28	30	32
2x 8	13	16	19	21	24	27	29	32	35	37	40	43
2x10	17	20	23	27	30	33	37	40	43	47	50	53
2x12	20	24	28	32	36	40	44	48	52	56	60	64
2x14	23	28	33	37	42	47	51	56	61	65	70	75
3x 4	10	12	14	16	18	20	22	24	26	28	30	32
3x 6	15	18	21	24	27	30	33	36	39	42	45	48
3x 8	20	24	28	32	36	40	44	48	52	56	60	64
3x10	25	30	35	40	45	50	55	60	65	70	75	80
3x12	30	36	42	48	54	60	69	72	78	84	90	96
3x14	35	42	49	56	63	70	77	84	91	98	105	112
4x 4	13	16	19	21	24	27	29	32	35	37	40	43
4x 6	20	24	28	32	36	40	44	48	52	56	60	64
6x 6	30	36	42	48	54	60	66	72	78	84	90	96
6x 8	40	48	56	64	72	80	88	96	104	112	120	128
8x 8	53	64	75	85	96	107	117	128	139	149	160	171
8x10	67	80	93	107	120	133	147	160	173	187	200	213
10x10	83	100	117	133	150	167	183	200	217	233	250	267
10x12	100	120	140	160	180	200	220	240	260	280	300	320
12x12	120	144	168	192	216	240	264	288	312	336	360	384

Hints on Alfalfa Growing

By J. E. Waggoner, Agricultural Expert

Alfalfa, the queen of legumes, is slowly but surely winning its way into the confidence and respect of the Corn Belt farmer, who has heretofore hitched his farm wagon to King Corn. There is a reason for this—the Corn Belt farmer is beginning to realize that a field of alfalfa is not only an excellent feed producer, but an enricher of the soil.

Careful alfalfa surveys carried on by state colleges and others indicate that there are many counties in the Corn Belt in which hardly a field of alfalfa can be found. This is undoubtedly the result of some having attempted to grow alfalfa and made a failure of it, their experience serving to discourage their neighbors from attempting to grow the crop. Very likely the fault was not with the alfalfa, but was due to improper methods of cultivation due to lack of knowledge of the nature of the plant. Many times experimental failures are as beneficial as experimental successes. They show us how not to attempt to grow a specific crop.

Alfalfa will grow and thrive upon a very wide range of soils, but will do best on the fertile, friable type. It has been grown quite successfully on rather sandy soils and on heavy clays, but these are extreme types and are not the best for the production of alfalfa. The fertile, productive soils of the Corn Belt, black with stored humus and full of plant food, when in proper physical condition, will produce an excellent crop of alfalfa.

One of the peculiarities of alfalfa is that it will not do well on lands that are poorly drained. It is a waste of time, seed, and money, to attempt to grow alfalfa on poorly or partly drained soils. The first important point to bear in mind is that land should be well drained.

Peculiar to the family of plants known as "legumes" alfalfa requires an abundant supply of calcium in order to produce the best results. Land on which there has been a decaying of vegetable matter for years may be acid in nature. Such land must be sweetened by the use of lime before any attempt is made to grow alfalfa. An abundant growth of clover and Kentucky blue grass, without the application of stable manure, is a good indication of non-acidity of the soil, and on land where these crops grow profusely, alfalfa should find a suitable home.

One of the farmer's best assistants in growing alfalfa is stable manure, used in generous quantities. It supplies a sufficient amount of available plant food to nourish the small alfalfa plants. It loosens up and aerates the soil, making a better seed bed. It is best to apply eight to ten tons of manure to the acre, and to mix it thoroughly with the soil by disking before plowing the seed bed for alfalfa.

Of all steps in raising alfalfa, the preparation of the seed bed is most important. Alfalfa does not require an unusually deep seed bed. The under part of the seed bed should be well drained and well stirred by disking or rolling, while the upper two or three inches should be mellow, friable and in a good state of cultivation. This condition can be best obtained by the use first of the plow, then the frequent use of the disk harrow. Going over the ground two or three times will not be time wasted. Then the use of the peg tooth harrow will make the surface smooth and level. It is better in starting alfalfa to confine one's efforts to a small area and see that the seed bed is well prepared rather than to attempt to sow a large area of poorly prepared ground. Remember that a thoroughly prepared seed bed is absolutely necessary in growing alfalfa.

There is some difference of opinion regarding the best time to sow alfalfa in the Corn Belt. Many farmers have obtained a good stand by seeding in the spring, while others have met with failure. Among the objections to spring seeding we find the difficulty experienced with weeds. Also, whenever the alfalfa does not come up in good shape, the farmer loses the use of the

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field for one year, as he cannot expect much alfalfa the first season. Taking everything into consideration, the farmers over the entire Corn Belt are beginning to favor late summer seeding in preference to spring seeding.

The term "late summer seeding" will apply to the latter half of July and through August, and farther south, the first half of September. Alfalfa should be sown at least six or eight weeks before frost so as to have time to make a strong growth before winter comes on. If the soil has been thoroughly cultivated after the crop has been removed, there will be a sufficient amount of moisture in the soil to insure germination. The advantage of late summer seeding is that a field may be used which has already produced some other crop that season. For instance, alfalfa may be sown in the late summer on the land that has already produced an early crop of small grain or early potatoes. Just as soon as the small grain is cut, the shocks should be removed from the area intended for alfalfa, and the seed bed thoroughly and carefully prepared. Lime should be applied (if found necessary) at least two or three weeks before seeding time, and incorporated with the soil by the use of the disk harrow.

One of the peculiarities of the alfalfa plant is that it will not gather nitrogen from the air in the soil unless the proper bacteria are present. These bacteria may be supplied by the use of soil from other alfalfa fields, or by use of soil obtained where sweet clover is growing. This soil should be applied at the rate of about 100 to 300 pounds to the acre—late in the afternoon, or during cloudy days and harrowed in by the use of the peg-tooth harrow. This application of old alfalfa or sweet clover soil is known as inoculation, and is essential to successful alfalfa growing.

The seed may be applied by one of two methods—either broadcast or drilling—but drilling is by far the better method, and should be practiced whenever possible. It places the seed in the soil at a more uniform depth. Most drills have grass seed attachments, which may be used for planting alfalfa. The rate of seeding depends somewhat upon the quality of the seed, but 20 pounds to the acre is the usual amount. Let me drop this warning to those who expect to start with alfalfa—be sure that the seed you get is good. An investment in good seed will pay in the long run.

Homestead Laws*

Any person who is the head of a family, or who is 21 years old and is a citizen of the United States or has filed his declaration of intention to become such, and who is not the proprietor of more than 160 acres of land in any state or territory, is entitled to enter one-quarter section (160 acres) or less quantity of unappropriated public land under the homestead laws. The applicant must make affidavit that he is entitled to the privileges of the homestead act and that the entry is made for his exclusive use and for actual settlement and cultivation, and must pay the legal fee and that part of the commission required, as follows: Fee for 160 acres, \$10; commission, \$4 to \$12. Fee for eighty acres, \$5; commission, \$2 to \$6. Within six months from the date of entry the settler must take up his residence upon the land and cultivate the same for three years continuously. At the expiration of this period, or within two years thereafter, proof of residence and cultivation must be established by four witnesses. The proof of settlement, with the certificate of the register of the land office, is forwarded to the general land office at Washington, from which a patent is issued. Final proof cannot be made until the expiration of three years from date of entry, and must be made within five years. The government recognizes no sale of a homestead claim. After the expiration of fourteen months from date of entry the law allows the homesteader to secure title to the tract, if so desired, by paying for it in cash and making proof of settlement, residence, and cultivation for that period.

The law allows only one homestead privilege to any one person.

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Some Standard Works on Agriculture

List Compiled by the I H C Service Bureau

The I H C Service Bureau has received so many requests from farmers and those interested in agriculture for information relating to standard books on agriculture, the price, and where they can be purchased, that the Bureau has compiled the list printed below. This does not by any means include all of the good books on agriculture. Those listed, however, can be considered reliable. These books are usually carried in stock by leading book-sellers. If you have difficulty in obtaining any of them, write the I H C Service Bureau. It will tell you just where the book can be purchased.

Name	Price	Name	Price
A B C of Corn Culture, by P. G. Holden.....	\$0.25	Modern Methods of Testing Milk and Its Products, by Van Slyke.....	\$.75
Alfalfa in America, by Jos. E. Wing..	2.00	Our Insect Friends and Foes, by Craigsins.....	1.75
Animal Breeding, by Shaw.....	1.50	Physics of Agriculture, by King.....	1.75
Book of Alfalfa, by Coburn.....	1.60	Potato, by Frase.....	.75
Book on Corn, by Bowman & Crossley	2.50	Practical Dairy Bacteriology, by Conn	1.25
Book on Dairying, by McKay & Larson	1.50	Primer of Irrigation, by D. H. Anderson.....	1.00
Cereals in America, by Hunt.....	1.75	Principles of Agriculture, by Bailey...	1.50
Clovers, by Shaw.....	1.00	Profitable Stock Feeding, by H. R. Smith.....	1.50
Clover Farming, by Henry Wallace...	.25	Profitable Stock Raising, by Shamel..	1.50
Cyclopedia of Agriculture, by Bailey..	20.00	Sheep Farming in America, by Wing.	1.00
Elements of Agriculture, by Warren...	1.10	Soils, by Fletcher.....	2.00
Farm buildings.....	2.00	Soil Culture Manual, by Campbell.....	2.50
Farm Dairying, by Laura Rose.....	1.25	Soil Fertility and Permanent Agriculture, by C. G. Hopkins.....	2.70
Farm Grasses in the United States, by Spellman.....	1.00	Spraying of Plants, by Bademan.....	1.25
Farm Machinery, by Davidson & Chase	2.00	Successful Corn Culture, by P. G. Holden.....	.25
Farmer's Business Hand Book, by Roberts.....	1.25	Testing Milk and Its Products, by Farrington & Woll.....	1.25
Farmstead, by Roberts.....	1.50	The Amateur's Practical Garden Book, by Bailey.....	1.00
Feeds and Feeding (new edition), by W. A. Henry.....	2.25	Types and Breeds of Farm Animals, by Plum.....	2.40
Fertility of the Land, by Roberts....	1.50	Uncle Henry to a Farm Boy, Henry Wallace.....	.25
Fertilizers, by Voorhees.....	1.50	United States Year Book, Div. of Publications, U. S. Dept. of Agr., Washington, D. C.....	.....
First Principles of Soil Fertility, by Vivian.....	1.00	Vegetable Garden, by Prof. Samuel B. Green.....	1.00
Forage and Fibre Crops, by Hunt...	1.75	Weeds, by Shaw.....	.50
Fungus Diseases of Plants, by Duggar	2.40		
Garden Making, by Bailey.....	1.50		
Horse Book, The, by Johnson.....	2.00		
Horse, The, by Roberts.....	1.25		
How to Choose Your Farm, by Hunt..	1.75		
Live Stock Judging, by Craig.....	1.50		
Milk and Its Products, by Wing.....	1.50		

Books on Domestic Science

Name	Price	Name	Price
Care and Feeding of Children, by L. E. Holt, M. D.....	\$0.75	Home Economics, by Maria Parloa...	\$1.50
Chemistry in Daily Life, by Lessar-Cohn.....	1.75	Home Nursing, by Harrison.....	1.00
Chemistry of Cookery, by W. Mattieu Williams.....	1.50	Home Sanitation, by Richards and Talbot.....	.25
Chemistry of Cooking and Cleaning, by Richards and Elliott.....	1.00	Home Water Works, by Carleton J. Lynde.....	.75
Cook Book for Nurses, by Sarah C. Hill.....	.75	Household Economics, by Helen Campbell.....	1.50
Diet in Relation to Age and Activity, by Sir Henry Thompson.....	1.00	How to Feed Children, by Louise E. Hogan.....	1.00
Dust and its Dangers, by Pruddens..	.75	Principles of Home Decoration, by Candace Wheeler.....	1.80
Elements of the Theory and Practice of Cookery, by William Fisher.....	1.00	Rural Hygiene, by Ogden.....	1.50
Food and Its Functions, by James Knight.....	1.00	The House, by Isabel Bevier.....	1.50
Food Materials and Their Adulterations, by Richards.....	1.00	The Healthful Farm Home, by Helen Dodd.....	.60
Food Products of the World, by Mary E. Green, M. D.....	1.50	Boston Cooking-School Cook Book, by Fannie M. Farmer.....	2.00
		The Baby—A book for Mothers and Nurses, by D. R. Brown, M. D....	1.00

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Books on Fruit Growing

Name	Price	Name	Price
Amateur Fruit Growing, by Prof. Samuel B. Green.....	\$0.50	Cyclopedia of Horticulture (4 vols.), by Bailey.....	\$20.00
American Apple Orchard, by Waugh..	1.00	Forcing Book, by Bailey.....	1.25
American Horticulturist Manual (Vol. 1), by Bud and Hanson.....	1.30	Horticulturists' Rule Book, by Bailey	.75
Book of Plants and General Horticulture, by Henderson.....	3.00	Nursery, by Bailey.....	1.50
Bush Fruits, by Card.....	1.50	Principles of Fruit Growing, by Bailey	1.50
		Pruning Book, by Bailey.....	1.50
		Spraying Crops, by Weed.....	.50
		The Fruit Growers' Guide, by E. H. FAVOR.....	1.00

Helps for Housewives

A Table of Weights and Household Measures

Every housekeeper knows the old saying—

A pint's a pound
The world around.

This is not literally true and we append some comparative weights and measures for various articles.

1 teaspoon liquid equal 4 saltspoons.	1 pint milk or water equals 1 pound.
1 tablespoon liquid equal 4 teaspoons.	1 pint chopped meat packed solidly equals 1 pound.
1 tablespoon dry material equals 3 teaspoons.	1 pound solid butter equals 2 cups.
1 wineglass liquid equals 4 tablespoons, or $\frac{1}{2}$ gill, or $\frac{1}{4}$ cup.	1 pound of granulated sugar equals 2 cups.
1 cup equals $\frac{1}{2}$ pint, or 2 gills, or 16 tablespoons liquid, or 12 tablespoons dry material, or 8 heaping tablespoons dry material.	1 pound powdered sugar equals $2\frac{1}{2}$ cups.
1 quart liquid equals 4 cups.	1 pound meal equals 3 cups.
1 quart flour equals 1 pound, or 4 cups.	1 pound eggs is (about) 9 large or 10 medium-sized eggs.

Cooking Time Table

For Baking Meats	Time in oven	For Boiling Meats	Time
Mutton, leg, per pound.	10 to 15 min.	Mutton, per pound....	15 min.
Beef ribs, per pound...	8 to 15 min.	Ham, per pound.....	20 min.
Round of beef, per lb....	12 to 15 min.	Chicken, per pound....	15 min.
Lamb, well done, per lb.	15 min.	Turkey, per pound....	15 min.
Pork, well done, per lb..	20 min.	Corned beef, per pound	30 min.
Veal, well done, per lb..	18 to 20 min.	Fowl, per pound.....	20 to 30 min.
Mutton, shoulder, stuffed, per pound....	15 min.	Tripe, per pound.....	3 to 5 hrs.
Venison, rare, per lb....	10 min.		
Goose, per pound.....	18 min.		
Chicken, per pound....	15 min.		
Turkey.....	$1\frac{3}{4}$ to 3 hours		
Birds, small (hot oven)	15 to 20 min.		
Ducks, wild (very hot oven)	15 min.		
Ducks, tame.....	45 min.		
Partridge.....	35 to 40 min.		
Bread.....	1 hour		
Custard (very slow oven)	1 hour		
Biscuits.....	20 min.		
Cakes.....	20 to 45 min.		

For Boiling Fish

Halibut, per pound....	15 min.
Bluefish, per pound....	10 min.
Bass, per pound.....	10 min.
Codfish, per pound.....	6 min.
Haddock, per pound....	6 min.
Salmon, per pound....	10 to 15 min.
Small fish, per pound...	6 min.
Lobster.....	30 to 40 min.

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Cooking Time Table—Continued

For Baking Fish

Shad.....	15 to 25 min.
Trout.....	15 to 25 min.
Bluefish.....	15 to 25 min.
Small fish.....	5 to 10 min.

For Broiling Meats

Mutton chops.....	8 to 10 min.
Grouse.....	15 min.
Quail.....	8 to 10 min.
Steak, 1½ inches thick.....	10 to 15 min.
Steak, 1 inch thick.....	8 to 10 min.
Spring chicken.....	20 min.
Squab.....	10 to 15 min.

For Boiling Vegetables

Peas.....	15 to 20 min.
Spinach.....	15 to 20 min.
Lima beans.....	30 to 40 min.
String beans.....	20 to 30 min.
Potatoes.....	20 to 30 min.
Asparagus.....	20 to 25 min.
Brussels sprouts.....	10 to 15 min.
Green corn.....	20 to 25 min.
Onions.....	30 to 40 min.
Parsnips.....	30 to 40 min.
Rice.....	15 to 20 min.
Turnips.....	30 min.
Beets.....	30 min. or more
Cauliflower.....	20 min.
Cabbage.....	20 min.
Macaroni.....	20 min.

To Can Tomatoes Whole

Take smooth medium-sized tomatoes. Put them in a pan and pour boiling water over them and allow them to remain in it until the skins slip off easily. Put them into cold water and remove the skins. Do not cut deep enough in any part to expose the seeds. Now have a granite or porcelain kettle partly filled with boiling water, drop in the whole fruit a few at a time and let remain long enough to get thoroughly heated but not to become soft. Remove and pack into cans, being careful not to mash or break; then fill the cans with boiling water. Seal immediately.

Delicious Currant Jelly

To make delicious currant jelly, heat the currants very hot with a little water to keep them from burning. Press through a colander, then through a vegetable press. Put as many pints of juice in your kettle as the kettle will hold. Boil steadily for 20 minutes, skimming when necessary. Allow one pound of sugar to each pint of juice. Put the sugar in iron pans on top of brown paper in a hot oven until piping hot. If it seems to burn, put paper on top. Keep the door of the oven closed. The sugar must be so hot that it does not stop the boiling of the juice when it is added at the end of 20 minutes. Let the sirup froth up just once after dissolving.

Up-to-Date Methods of Preserving

In jarring or preserving fruit, the flavor is best preserved by boiling water around the jars of fruit rather than boiling the fruit itself. Here is an excellent method of cooking fruit in jars. You need a good size wash boiler to hold eight quart jars and eight tin holders. If you cannot buy these tin holders your tinner will make them. If you have no holders, put clean shingles in the bottom of the boiler on which to stand the jars. Select the fruit carefully and pick it over to see that there are no spotted bits included. It should be prepared as for ordinary canning, but instead of being put in a kettle, put directly into a quart jar. Shake down once or twice to pack it solidly as the fruit shrinks considerable after boiling. The table below gives the required amount of sugar. Have plenty of boiling water on the stove. Put the sugar in a small pitcher or pint measure and cover with boiling water. Do not use too much water at first. Pour the sirup over the fruit and add enough water to fill the jars. Put on the rubber and screw the covers loosely. Put each jar in a stand and set the eight at once in a wash boiler filled to

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within an inch of the covers of the jars with lukewarm water. After the water comes to the boiling point, cook the length of time required as shown by the table. Remove from the fire and unscrew covers for a few minutes to allow the steam to escape. Re-screw tightly and turn each jar upside down on the table to see that they are entirely air-tight.

Table for Boiling Fruit

Fruits	Time for Boiling	Amount of Sugar to Quart	Fruits	Time for Boiling	Amount of Sugar to Quart
Cherries (sweet).....	5 minutes	6 ounces	Peaches (halved or whole).....	8 minutes	8 ounces
Cherries (sour).....	5 minutes	8 ounces	Pineapple (sliced).....	15 minutes	10 ounces
Raspberries.....	6 minutes	6 ounces	Crab apple.....	25 minutes	8 ounces
Blackberries.....	8 minutes	8 ounces	Sour apples (quar-tered).....	10 minutes	8 ounces
Strawberries.....	8 minutes	8 ounces	Currants.....	6 minutes	10 ounces
Plums.....	10 minutes	8 ounces	Wild grapes.....	10 minutes	8 ounces
Green gages.....	10 minutes	8 ounces	Gooseberries.....	8 minutes	8 ounces
Huckleberries.....	5 minutes	4 ounces	Quinces (sliced).....	35 minutes	10 ounces
Pieplant (sliced).....	10 minutes	10 ounces	Tomatoes.....	45 minutes	Teaspoon-ful of salt.
Small sour pears.....					
(whole).....	30 minutes	8 ounces			
Bartlett pears					
(halved).....	20 minutes	6 ounces			

The Home Emergency Chest

References: Accidents and Emergencies, by Charles W. Dulles, M. D., of the College of Physicians and Academy of Surgeons, Philadelphia; Prompt Aid to the Injured, by Alvah H. Doty, M. D., Health Officer of the Port of New York.

Every household has its tried and true remedies for the various ailments to which the flesh is heir. Too often, however, these remedies are not conveniently at hand when the emergency arises which calls for their use. A family medicine chest, stocked with staple, simply administered remedies for the relief of the lighter ailments, or in case of serious emergencies, to give intelligent treatment "until the doctor comes," is a necessity that no well-regulated household should be without. One of the most satisfactory chests for family use is a plain box built to the wall. This should be supplied with shelves and a hinged door, fitted with a lock and key. The precaution of a lock and key is most important where there are children, and even where there are none, it is safest on general principles. Among the standard remedies recommended by physicians as worthy of a place in the home emergency chest are the following:

Aromatic Spirits of Ammonia.....	3 oz. bottle
Castor Oil.....	3 oz. bottle
Syrup of Ginger.....	3 oz. bottle
Syrup of Ipecac.....	3 oz. bottle
Essence of Peppermint.....	3 oz. bottle
Listerine.....	3 oz. bottle
Sweet Spirits of Nitre.....	3 oz. bottle
Oil of Cloves.....	1 drachm
Epsom Salts.....	2 oz.
Calomel (1-10 grain tablets).....	50
Quinine Pills (2 grain capsules).....	4 doz.
Carbolized Salve.....	3 oz. jar
Hydrogen Peroxide.....	3 oz. bottle
Sweet Oil.....	3 oz. bottle
Turpentine.....	3 oz. bottle
Carron Oil (Consists of one-half lime and one-half raw linseed oil. Mix 1 pint of each.).....	
Dry Sulphur.....	½ pound
Lime Water.....	1 quart

Other remedies of proved value can be added to this and in addition the chest should contain rolls of soft clean linen for bandages; a glass medicine dropper; eye cup; soft rubber ear syringe; atomizer for spraying throat or

nostrils; 1 roll oiled silk; pair of scissors; package of court plaster; package of absorbent cotton; safety pins (large and small); needles and strong thread.

Uses and Application of Remedies

Aromatic Spirits of Ammonia—Is useful as a stimulant and is often used in place of alcoholic stimulants where their use is objected to. Is also useful in cases of acid dyspepsia, nervous or sick headache, and simple nervousness. The dose for an adult is a $\frac{1}{2}$ -teaspoonful in about a third of a tumbler of cold water; for a child, ten drops in a fourth of a tumbler of water. This may be given every fifteen minutes until four or five doses have been taken.

Castor Oil—General use is well known.

Syrup of Ginger—Good for diarrhea with cramping pains. Dose: One-third teaspoonful in 1-3 glass of water every hour for four doses.

Syrup of Ipecac—A good emetic if used freely. An adult should be given a tablespoonful and in case of an infant as near a teaspoonful as possible. It will do no harm and too much is a safer risk than not enough. It is used in cases of poisoning, convulsions, croup, whooping cough or asthma.

Essence of Peppermint—A few drops in warm sweetened water excellent for colic in infants. Also good in cases of indigestion, for adults.

Listerine—Excellent for gargling in cases of sore throat or for a wash in cases of sore mouth. Curative and soothing. Not intended to swallow, but is not harmful.

Sweet Spirits of Nitre—A most useful domestic remedy. A teaspoonful is added to a tumbler of water and dose for adults is a tablespoonful, and for a child of any age a teaspoonful of the mixture every half hour. Good for fever. Promotes healthy activity of skin and kidneys and will often loosen a tight cough.

Oil of Cloves—Used chiefly for toothache, a piece of cotton being saturated and inserted in tooth. A few drops added to a teaspoonful of olive or sweet oil and rubbed into the skin will often relieve neuralgia.

Epsom Salts—A tested and tried cathartic. Dose for an adult is a tablespoonful dissolved in about a tumblerful of water. For carbolic acid poisoning, two tablespoonfuls dissolved in a little water.

Calomel—A 1-10 grain tablet taken every half hour for ten doses for an adult, or four doses for children, is an effective cure for acute constipation.

Quinine—Standard remedy for breaking up cold, or for malarial attacks. For internal hemorrhage of women, 10 grains mixed with water will often promptly check and should be given in every case.

Carbolized Salve—Cleansing and healing for bruises.

Hydrogen Peroxide—A most valuable cleanser of infected wounds or sore spots.

Sweet Oil—Healing for sore spots and bruises.

Turpentine—Practically all danger of tetanus or lockjaw may be averted in case of wounds caused by nails or other metal, if the wound is kept well soaked with turpentine. For tight cold on the chest, nothing excels a thorough greasing with lard or sweet oil to prevent blistering and then a generous application of turpentine, covering chest with piece of flannel.

Carron Oil—Invaluable for burns.

Dry Sulphur—In case of ulcerated sore throat, nothing is more effective than to cover the ulcers with the dry sulphur by inhaling with a clay pipe. Light cases of diphtheria have been successfully treated with it where a physician was an impossibility. No chances should ever be taken, however, if there is the slightest suspicion of that disease, but a doctor called without delay.

Lime Water—Is excellent to settle sick stomachs. May be prepared by putting a piece of lime as large as a small apple in a quart or two of water and allowing mixture to stand for a few hours. The clear water is then poured off and bottled for use. Good to give children in milk in hot weather.

Emergencies and Accidents

By Dr. W. B. Fisk, Chief Surgeon, International Harvester Company

Nature of Accident	Cause	Symptoms	Signs	Treatment
Burns	Red heat, flames, molten metal, clothing on fire.	Pain, pallor, weak pulse.	Vary from reddening and blistering to charring.	Make person lie down; roll in shawl, blanket, or rug. Dressings—cloth or rags soaked in thick oil, vaseline or boracic ointment. Metal burn of eye—use castor oil in eye.
Scalds	Boiling water, oil, or fat.	Pain, pallor, weak pulse.	Redness and blistering.	Same dressings used in Burns.
Acid Burns	Sulphuric acid (vitriol), Nitric acid (Aqua Fortis) Hydrochloric acid (Sp. of Salts.)	See burns and scalds.	Destruction of skin Scarring.	Apply strong solution of baking soda, then dress with oil or vaseline. If acid has been inhaled, breathe ammonia fumes. If acid is swallowed, give soapuds, carbonate of soda, lime solution, chalk with water.
Alkali Burns	Caustic soda or Potash Ammonia.	See burns.	Less scarring than in acids.	Apply vinegar, weak acetic or tartaric acid, citric acid or lemon juice. Later, treat as burns.
Scalded Throat	Boiling water swallowed.	Pain; difficult swallowing and breathing.	Redness or whiteness of throat; swelling.	Hot applications to front of chest and throat. Give a little milk. Artificial respiration if there is difficult breath. Send for a doctor.
Stings of Insects	Bee, spider, mosquito.	Pain—burning.	Redness and swelling	Remove sting with hollow key. Apply ammonia potash.
Foreign body in Eye	Dust, metal, insect.	Continuous pain and watering.	Painful to light—redness.	Roll lid up with lead pencil. Remove speck with camel-hair brush. Bathe eye with hot water or boric acid solution. Put one drop castor oil in eye. Have patient see doctor if pain lasts several hours.
Foreign body in Ear	Beads, peas, corn, insects.	May be none; deafness; pain may arise from inflammation.	Insects will cause noise; may be seen.	Warm oil will kill and cause insect to float. Remove foreign body with bent hair-pin. Do not syringe with water if object is wood or vegetable.
Foreign body in Nose	Pins, peas, beans, corn meal.	May be none; pain difficult breathing.	May be seen.	Syringe opposite nostril with warm water. Get child to cough or sneeze, closing mouth and opposite nostril and forcing air out through affected side.
Foreign body in Throat	Fish bones, pins, meat bones, tooth plates.	Difficult swallowing.	May be visible.	Try to remove with index finger passed down throat. Hang patient head downward if object is large.
Foreign body in Stomach	Coins, nails, pins.	May be no symptoms.		Feed the patient on soft food—corn, flour, porridge, suet pudding, bread for two days. Give no fluid for eight hours. Give castor oil third morning. (Mercury from a thermometer if swallowed requires no treatment as it is non-absorbable.)

Electricity—Shock	Live wire.	Shock, Insensibility.	May be burns.	Throw iron bar, wire, or metal substance, on live wire to short circuit current. Remove your coat to stand on. Use your vest to wrap about your hand which you use in extricating person from wire. Use artificial respiration if necessary.
Corrosives—Swallowed	Carbolic acid.	Whitening of lips, tongue, mouth; odor of carbolic on breath, drowsiness, pupils small, pulse rapid.		Give Epsom salts, $\frac{1}{2}$ oz., in tumbler of water; later give oil or milk, then stimulants. Apply hot blankets and hot water bottles to feet and legs.
Alkalies—Swallowed	Caustic soda, caustic potash.	Corrosion of lips, mouth, throat and stomach, vomiting, abdominal pain, shock.		Give vinegar (acetic acid) and water, tartaric or citric acid, lemon juice. Later give milk and arrowroot.
Strong mineral acids—Swallowed	Sulphuric acid, Hydrochloric acid, Nitric acid.	Corrosion of lips and tongue. Pain in throat, vomiting of bloody mucus.		Give soap suds—carbonate of soda (sal soda), baking soda—lime—chalk mixed with water.
Opium—Poisonous doses	Paregoric, Laudanum, Soothing Syrup	Drowsiness (following a brief excitement) deepening into coma. Pupils small—breathing slow.		You should look for a bottle or box, and think if medicines have been given. Emetics, ammonia to nostrils, strong coffee (mouth or in enema) artificial respiration, walk patient about, slap with wet towels.
Mushroom Poisoning	Purple and scarlet are worst.	Abdominal pain, purging, vomiting, coldness, slow pulse, stertorous breathing.		Emetics, castor oil, stimulants, warmth.
Turpentine Swallowed in large amounts	Taken by accident.	Odor on breath, unconsciousness, stertorous breathing.		Emetics, zinc sulphate, 1-3 teaspoonful in $\frac{1}{2}$ glass water, castor oil, white of eggs, milk.
Syncope (fainting fit).	Pain, Fright.	Pale (later dark—if epilepsy). Pupils dilated. Pulse feeble—breathing shallow.		Undo all tight clothing. Place in current of air with head low. Sprinkle face with cold water. Rub the hands. Artificial respiration, if necessary. Later give coffee or stimulants.
Sunstroke	Exposure to sun.	Flushed—pupils first dilated, later very small—pulse rapid and full, breathing laboured and deep, temperature high 106-7.		Give cold bath and acid lumps of ice, if possible. Pour cold water over head.
Frozen Extremities	Exposure to cold.	Whitening of parts, stiffness, putting on pressure.		Continuous application of cold water with very gentle massage until color has returned and pain ceased. Later treat as burn. If frozen more than two hours, keep heat applied for 48 hours.

The Fireless Cooker on the Farm

The fireless cooker which now has an accepted place in such a large percentage of city homes has advantages just as great for the farm home. There are many of these cookers now on the market that can be bought at a very reasonable figure, especially the single cookers or those intended for only one cooking vessel. Such a one will afford an opportunity to get acquainted with the cooker's possibilities and at the same time give a large amount of service. Too often the fireless cooker is given only a half-trial and as a result only half does its work, and is then condemned as nice-sounding in theory, but not practical.

One of these cookers can be successfully made at home if the fundamental principle on which they are based is kept in mind. The principle is simple. Food which has been brought to a good boil over a fire is closed up with an air-tight cover and placed in a box and completely surrounded with some non-conducting material like hay, sawdust, or asbestos, which holds the heat in. The heat thus imprisoned continues cooking the food. A tightly-covered tin or granite can or bucket or a kettle, preferably without a handle, but having a tight cover, a wooden box with a hinged cover, and packing material, are the essential requirements for a home-made fireless cooker. The packing box should be considerably larger, say three or four inches in every direction, than the vessel used for cooking. Line the box with several thicknesses of paper, then fill with sweet clean hay, leaving a nest in the center in which to put the vessel containing the food. Have plenty of hay under the vessel and make a cushion pad of hay to go on top. The space must be completely filled so that when the top is fastened down, the box will be tightly packed.

The food which is to be cooked is placed in the can or kettle and put over the fire, where it is brought to the boiling point and cooked for a short time—from two or three to ten minutes (the time depends on the material and must be learned by experience). It is then placed in the box, covered, and the lid shut down tight. The length of time for fireless cooking is ordinarily the same as when cooked on the stove. The cooker must not be opened until ready to serve the food, though if it is something that requires very long cooking like a big roast or ham, or baked beans, it would be well to take out and re-heat on the stove after three or four hours and return to the cooker for several hours longer. The success of a cooker lies in having it packed tight to exclude all air, having the food boiling hard when put in, and in closing up quickly to prevent any escape of heat.

Fly Catechism

Where is the fly born? In manure and filth.

Where does the fly live? In all kinds of filth and he carries filth on his feet and wings.

Where does the fly go when he leaves the manure pile and the spittoon? He goes into the kitchen, the dining room, and the store.

What does the fly do there? He walks on the bread, fruit, and vegetables; he wipes his feet on the butter and he bathes in the milk.

Does the fly visit patients sick with consumption, typhoid fever, and cholera infantum? He does, and he may call on you next, carrying the infection of these diseases.

What diseases does the fly carry? Typhoid fever, consumption, diarrheal diseases, diphtheria, scarlet fever, and, in fact, any communicable disease.

How can the fly be prevented? By destroying all the filth about your premises; screen the privy vault, cover the manure bin, burn all waste matter, destroy your garbage, screen your house.

Either man must kill the fly or the fly will kill man. Prevent the fly.

The International Auto Wagon



The illustration above shows eleven International commercial cars recently purchased by a public service corporation in Cincinnati, Ohio. This corporation found, after thorough trial and careful comparison, that International auto wagons can be relied upon 365 days a year—that they were constructed to do the work, and, as a result, made good—that they were economical in operation, correct in design, and of the best construction.

The International auto wagon was one of the first commercial cars on the market, and from its inception there has been a constant growth in the volume of sales until today these cars are built at one of the largest factories in the world, devoted exclusively to the manufacture of this type of car.

The large number of International auto wagons in use in all lines of business is the best evidence of their utility. The fact that many owners have purchased additional cars of the same make, is convincing proof of the satisfactory service they are giving their owners.

There are three reasons for the wonderful success of the International auto wagon:

First—It is built for the work for which it is intended—commercial work in town and country. As a result, it makes good in this class of work.

Second—Extreme simplicity of construction means that it is easily operated. The International auto wagon is therefore very popular with men in all lines of business all over the country.



Local implement dealers, store keepers and farmers find the International auto wagon an economical and efficient means of delivery, especially over country roads

Third—The International Harvester Company of America has branch houses and representatives in every important city and town. As a result International auto wagons and repair parts can be delivered promptly.

Farm Accounting

By

Stephen D. van Benthuyzen, Dakota Wesleyan University

Every farm is a factory into which money, labor, and thought are applied to soil and natural forces which create produce for consumption. The great problem of the farmer, therefore, consists in knowing the cost to harness the forces of nature and soil and reap financial benefits for his discovery.

The Farmer A Business Man

The American farmer is rapidly becoming one of the best types of the modern business man. In the last decade there has possibly been more progress in business methods among farmers, showing a growing tendency to keep systematic record of farm accounts, than in any other period of American agriculture. The American husbandman is making a financial success of his vocation, based largely upon his business integrity, the organization of farm accounts, and the keeping of a systematic record of the various departments of industry found on every American farm. The farmer's field of opportunity is just as vast in making application of what is termed in accounts a comprehensive study of cost of production and sale, as is afforded to the man of the big manufacturing industry in reckoning the cost of an article produced in the factory.

Diversity of Farm Industries

When we speak of farming in a general sense outside of the specialized features, the farmer's accounts include such department heads as horses, cattle, dairy products, hogs, sheep, wheat, corn, oats, barley, and poultry.

The farmer, whether owner or renter, should carefully consider his capital invested, make due allowance for the cost of his rent, if a renter, or the cost of the farm, if an owner, figuring 6 per cent interest on his capital involved in his venture. This he should never fail to do before he estimates his earnings or loss at the end of a given season.

Take for instance a field of wheat. The farmer should know the number of acres in the field; he should keep a strict record of his labor involved in the tillage of the field and the preparation of the soil for the crop, such as manuring, plowing, harrowing, disking, giving exactly the number of days required on the field and the price per hour for man and team. He should also make some estimate of wear and tear on his machinery, which is usually figured for each season's use at an average of about 10 per cent of the cost of the implement. When he sows the wheat he should keep a strict account of the number of bushels of wheat sown in the field, and its value. If the seed was treated, or if the field was sprayed for weeds, this should enter into its proper estimate in the strict account for the field.

When the field of wheat is ready for the harvest, the wear and tear on the machinery involved for the number of acres engaged or figured for the season, should be estimated on the depreciation of the machinery, and further, the whole time given by the laborers and teams should be carefully recorded for this particular field of wheat. The threshing should be considered in the same way. The hauling of the wheat to the market and its sale should be carefully noted in bushels. Any unsold quantities should be considered as an inventory, and always carried at its cost of production. After the sales have been completed, the capital accounted for as invested in rent for the field or as a part of the home of the owner, should be taken into consideration. Thus the exact returns can be determined for each particular field.

Figuring Interest on Capital Invested

It should be carefully noted that the farmer would not, under any circumstances, consider the market value of his farm in estimating the capital invested, but he should consider only what the farm actually cost him. It is contrary to the best principles of accounting to enhance values of a farm annually upon books, even though the property does become more valuable.

Improvements put upon the farm should be charged to the already fixed value of the farm if they are of permanent character. If the improvements are of the nature of repairs they must not enter in as a part of the real value of the farm, but should be considered as an item of expense and figured out of the net returns at the end of the year.

Importance of a Financial Showing

All of the departments of the farm can be accounted for in the same way. Take for example the amount needed to supply the family. A strict account of all purchases should be made, whether for wearing apparel or for kitchen or table use. This should be termed as an item of expense at the end of the year when figuring up the net income for the products of the farm.

Unless he has had some training the farmer should not attempt book-keeping on an extensive scale, but he should make a strict accounting of every department of income and outlay of the business in which he is engaged.

It is often said that the American farmer is at sea when it comes to getting complete data as to what each field produced, as to what his dairy products yield monthly or annually, and as to whether the poultry business has been a success. A little study and application of the principles of farm accounting will be of great advantage to every farmer in keeping a comprehensive record of his transactions, and of his business ventures as a farmer and a business man for each season. This, we believe, will have a tendency to help farmers to be economical and saving in dealing with the specialized industries about the farm.

Business Methods of the Farmer

Every farmer should be a student of business methods. The farmer who deposits in the bank every dollar he secures for the sale of his products, and who has access to this money by use of a check book, is fostering a practice which will greatly enhance his credit and give him enlarged opportunities as a business man. The modern farmer is learning that if he has \$10 in the bank, he has that much more credit, while if he has \$10 in his home in currency, he may not have any credit at all. Another thing: The farmer who pays his bills by check instead of the use of currency always finds the check returned by the bank at the end of the month, which protects him in the payment of the account. The development of the bank habit among farmers by the use of the deposit and check systems is making the American agriculturist one of the best types of the modern business man. The farmer who consistently practices economy and who makes farming a business and conducts it as a student as well as a business man is the one who in the end makes a success of his venture.

Good reading matter and suggestions for improvement of business methods can be had in many cases for the asking. Good books, magazines, and literature of all kinds are at the disposal of the American farmer, for his benefit. Books of an economic character which will train him in the science of business and the adaptation of his knowledge to the industries of the farm are especially commended for the farmer's use.

IHC ALMANAC & ENCYCLOPEDIA

Statutory Weights of the Bushel

STATE OR TERRITORY	Wheat	Rye	Oats	Barley	Buckwheat	Shelled corn	Corn on cob	Cornmeal unbolt	Bran	Malt	Potatoes, Irish	Potatoes, sweet	Carrots	Onions	Turnips, English	Beets	Beans	Peas	Apples	Dried apples	Dried peaches	Castor beans	Flaxseed	Hemp seed	Millet seed	Timothy seed	Blue grass seed	Hungarian grass seed	Clover seed
United States.....	60	56	32	48	42	56	70	48	34	60	60	55	57	57	55	60	60	60	24	33	33	50	56						
Alabama.....	60	56	32	47		56	70	48		60	60	55			55		60	60		24	33								
Alaska.....																		55											
Arizona.....	60	56	32	45													55												
Arkansas.....	60	56	32	48	52	56	70	48	20		60	50	57	57			60	60	50	24	33				50	60	14		60
California.....	60	54	32	50	40												60	60	60	50	24	33							
Colorado.....	60	56	32	48	52		70	50	20		60		57				60		60	48	25	33		55		44	45	14	60
Connecticut.....	60	56	32	48	48			48				54	50	52	50	60	60	60	48	25	33								
Delaware.....	60										60																		
Dist. Col.....	60										60	60		56	54		60		48	24	33		48		50				
Florida.....	60	56	32	48		56	70	48	20		60	60		56	54		60												
Georgia.....	60	56	32	47	52	56	70	48	20		60	55		57	55		60	60		24	33		56	44	45	14			60
Hawaii.....	60	56	32	48																									
Idaho.....	60	56	36	48	42						60								45	28	28			56					60
Illinois.....	60	56	32	48	52	56	70	48	20	38	60	50	57	55			60			24	33	46		56	44	45	14		60
Indiana.....	60	56	32	48	50	56	68	50		35	60	55	48	55			60			25	33	46		44	50	45	14		60
Iowa.....	60	56	32	48	52	56	70		20		60	46	57				60		48	24	33	46		56	44	50	45	14	50
Kansas.....	60	56	32	48	50		70	50	20	32	60	50	57	55			60		48	24	33	46		56	44	50	45	14	50
Kentucky.....	60	56	32	47	56	56	70	50	20		60	55		57	60		60	60		24			45	56	44	50	45	14	50
Louisiana.....	60	56																											
Maine.....	60	50	32	48	48			50			60		50	52	50	60	60	60	44										
Maryland.....		26									56																		
Massachusetts.....	60	56	32	48	48	50		50	20		60	54	50	52			60	60	48	25			55		45		14		60
Michigan.....	60	56	32	48	48	56	70	50			60	56		54	58		60	60	48	22			46	56	44	50	45	14	50
Minnesota.....	60	56	32	48	50	56	70				60	55	45	52			50	60	50	28					50	48	14		60
Mississippi.....	60	56	32	48	48	56	72	48	20	38	60	60		57	55		60	60		26			46	56	44	50	45	14	50
Missouri.....	60	56	32	48	52	56	70	50	20	38	60	56	50	57	42		60	60	48	24			46	56	44	50	45	14	48
Montana.....	60	56	32	48	52	56	70	50	20	30	60		50	57			50	60	45				56	44	45	14	50	60	
Nebraska.....	60	56	32	48	52	56	70	50	20	30	60	50		57	55		60	60		24			46	56	44	50	45	14	50
Nevada.....																													
New Hampshire.....	60	56	32					50			60								62	60									
New Jersey.....	60	56	30	48	50						60	54		57			60	60	50	25			55						64
New Mexico.....																													
New York.....	60	56	32	48	48			50	20		60	54	50	57			60	60	48	25			55		45				60
North Carolina.....	60	56	32	48	50			48											60										60
North Dakota.....	60	56	32	48	42	56	70		20		60	46		52	60	60	60	60	50				55		50	45			60
Ohio.....	60	56	32	48	50	56	68		3	4	60	50	50	55	60	56	60	60	50	24			56	44	50	45		50	60
Oklahoma.....	60	56	32	48	42	56	70		20		60	46		52	60	60	60	60					56			42			60
Oregon.....	60	56	32	46	42						60								45	28									60
Pennsylvania.....	60	56	32	47	48						56			50															60
Rhode Island.....	60	56	32	48	48	56	70	50	20	3	60	54	50	50	50	50	60	60	48	25			46	56	44	50	45		50
South Carolina.....								48																					
South Dakota.....	60	56	32	48	42	56	70		20		60	46		52	60	60	60	60					56			42			60
Tennessee.....	60	56	32	48	50	56	70	48	20		60	50	50	56	50	50	60	60	50	24			46	56	44	50	45	14	48
Texas.....	60	56	32	48	42	56	70		20		60	55		57	55		60		45	28			56	44	50	45		48	60
Utah.....																													
Vermont.....	60	56	32	48	48	56					60		50	52	60	60	62	60	46							45			60
Virginia.....	60	56	30	48	52	56	70	50		3	56	56		57	55		60	60		28	32			56	44	50	45	14	48
Washington.....	60	56	32	48	42						60								45	28									60
West Virginia.....	60	56	32	48	52						60						60			25				56		45			60
Wisconsin.....	60	56	32	48	50			50	20	34	60	54	50	57	42	50	60	60	50	25				56	44	50	45		48
Wyoming.....																													

NOTE.—Rye meal takes 48 lbs. to the bushel in the District of Columbia and 50 lbs. in Maine, Massachusetts, New York, Rhode Island, and Wisconsin. Peeled dried peaches take 38 lbs. to the bushel in Alabama and 40 lbs. in Virginia. The metric system is used in the Philippines and Porto Rico.

Deviations in Laws of Weights and Measures

With such diversity of weights and measures it is apparent that joint action should be taken by the various states with a view to adopting uniform laws with reference to weights and measures, and even now conferences of many interested departments, municipal and state, are being held under the lead of the Director of the Bureau of Standards of the United States Government.

THE FABLE OF THE INCONSISTENT FARMER

There once lived a Farmer strong on Pedigree. He couldn't walk through his own Pastures without getting snubbed. There wasn't a Bull in his Herd, Sheep in his Fold, Hog in his

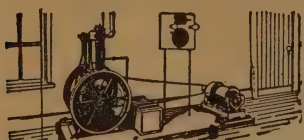


Sty, or a Horse in his Stable but was a straight line Descendant from Stock Royalty. He never planted a Kernel of Corn unless a Check Book had paid for the Ear it came from. Everything that lived or grew on his Farm could go out and pick its own Shade of Blue Ribbon. Beyond that

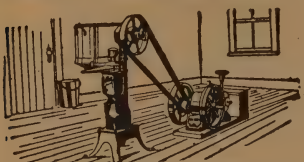
the Farmer's Wires grounded. Playing the Jumping Jack with the Pump Handle on Days that the Wind took voluntary Leave of Absence, put a Crick in his Back and a Wrinkle in his Brow. Some One told him to import a Gasoline Engine from a Mail Order Promissorium half way across the Continent. It was a lot cheaper and supposed to work just as satisfactorily as the Engine handled by the Local Dealer. And the Man who wouldn't have an unregistered Cat in his Kitchen sent his Money for an Engine without a Pedigree. About the Time the Blisters had departed from his Hands the Mongrel Engine showed its Streak of Yellow and quit him cold. The nearest Repairs, as far as the Farmer was concerned, might have been in Joppa. He found out he got better Satisfaction arguing with the Pump Handle than with the Promissorium.



Moral: When you're out after Pedigree—be consistent.



The Small Electric Light Plant will prove a Great Convenience and Comfort. Use an I H C Engine to Operate the Dynamo



An I H C 1-Horse Power Air-Cooled Engine Operating a Blue-bell Separator. An Ideal Outfit



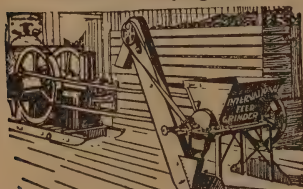
As a Power for an Irrigating Plant the I H C Engine makes good



This I H C Portable Engine is Operating the Silo Filler.



Water When You Want It, with an I H C Pumping Outfit



The Ever Ready I H C Engine Belted to an I H C Feed Grinder

Don't Dull the Edge of Life on the Farm

It's the little things around the farm that count; it's the little things that irritate. If all the farmer or the farmer's wife had to do was to jump into the big work of the day and clean up, farm work would be somewhat of a pleasure.

Operate the churn, the wood saw, separator, washing machine, feed grinder and fanning mill by hand and you do the work of the gasoline engine with no further compensation than a lame back. And it's just the back-breaking labor over these little things that dulls the edge of life on the farm.

Why not let the engine do your work? It will bring a saving in time that means money, and a saving in downright hard work.

I H C engines are made in so many sizes and types that you can get just the engine you want for your special needs.

Here is the complete line:

- Vertical Tank-cooled—2 and 3-H. P.
- Vertical Air-cooled—2 and 3-H. P.
- Vertical Hopper-cooled—2 and 3-H. P.
- Vertical on Skids—Tank, Hopper, or Air-cooled—2 and 3-H. P.
- Horizontal Air-cooled—1-H. P.
- Horizontal Tank-cooled—4, 6, 8, 10, 12, 15, 20, 25 and 50-H. P.
- Horizontal Hopper-cooled—1, 2½, 4, 6, 8 and 10-H. P.
- Horizontal on Skids, Tank-cooled—4, 6, 8, and 10-H. P.
- Horizontal on Skids, Hopper-cooled—1, 2½, 4, 6, 8 and 10-H. P.
- Horizontal Mounting, Tank-cooled—4, 6, 8, 10, 12, 15 and 20-H. P.
- Horizontal Mounting, Hopper-cooled—4, 6, 8, and 10-H. P.
- Horizontal Portable, Tank-cooled—4, 6, 8, 10, 12, 15, 20 and 25-H. P.
- Horizontal Portable, Hopper-cooled—4, 6, 8, and 10-H. P.
- Vertical 2-cylinder—25 and 35-H. P.
- Traction—12, 15, 20, 25 and 45-H. P.
- Sawing Outfits, Pumping Outfits, Spraying Outfits, Electric Light Outfits, Pump Jacks, etc.

I H C oil and gas engines are sold by a dealer in your locality whose success depends upon your good will. He knows that he cannot afford to give you anything but the squarest kind of treatment,



The Farm Power House

In the modern scheme of farming, economy of time and energy is of vast importance. Any convenience, any machine or arrangement which will bring about this economy, finds a place on the up-to-date farm. The gasoline engine has long been recognized as one of the most practical machines for saving time, money and energy, but to realize its greatest advantages, the engine should be installed in a farm power house. With an installation of this nature, the farmer is in position to operate any or all of his machines under the most favorable conditions.

The Farm Power House may be a separate building or shed, one part of which houses the engine and the remainder divided into two rooms, one to be used as the dairy and the other for the grinder, sheller, and such machines as create dust when in operation. This type of power house has been fully described in the 1912 issue of the I H C Almanac.

In this issue we show an illustration of a power house in connection with the granary. This arrangement provides for two rooms in the power house and one in the granary.

In the engine room might be located the grindstone, emery wheel, drill and work bench so that this room becomes a workshop. If a dynamo is used to furnish light for the house, it can also be located in this room.

In the other room can be located the churn, cream separator, pump and drain, dairy table, and a large washing trough. This room then becomes the dairy. In the granary can be located the grinder, sheller, cutter, and fanning mill. The granary containing these machines should be tightly partitioned off from the power house because these machines when in operation create dust, which interferes with the successful operation of other machines.

All these machines in the power house should be driven by belt from line shafting which is set overhead or hung from the ceiling.

The line shafting can be extended through the end of the building so that a blacksmith's bellows, or circular cut-off and rip saw, band saw, or any other wood-working machines can be driven on the outside from the same power. The illustration shows an arrangement which has proved very practical. The cost of such an installation, considering the benefit derived, is very slight.

The Farm Water Supply

The one feature of the city home which has always held the greatest attraction for the farm housewife is the running water system. With a similar system of hot and cold water in the kitchen for washing dishes, cleaning the separator, cooking, washing and scrubbing, she has felt that her housework would be freed of much of its drudgery. Then, too, she has realized that the luxury of the bath after a hard day's work, without the trouble of carrying and heating water, would add much to the comfort and healthfulness of the entire household.

Happily this convenience is now within the reach of every farm and country home. Thousands of these homes are now equipped or being equipped with private water supply systems which provide every luxury and convenience the city resident enjoys from the public water works.

In addition to the labor saved the housewife and the comfort it provides for the entire household, the farm water works supplies water for fire protection, irrigation, and for watering the stock. Running water on tap in the stable saves the farmer as much labor and time as it saves his wife in the house. As a pure business proposition alone, a running water system is just as valuable as many time and labor saving devices all farmers have adopted for planting, cultivating and harvesting their crops. There is no equipment that will save so much time and labor on the farm and at the same time add so much to the pleasures of farm life.

Any farmer can easily lay out and install a suitable system at a very moderate cost. There is no more reason now why every modern farm should be without a private water works system than there is that the farmer should have to harvest his wheat with a cradle or cultivate his corn with a hoe.

In planning a private water works system there are two general features to be decided upon:

1. The type of pump to use; whether hand, windmill or power operated.
2. The method of distributing the water to the various cocks after it is pumped; whether from an elevated tank from which the water flows by gravity or by a pneumatic tank installed below ground from which the water is forced up to the various cocks by air pressure.



Fig. 1. The Elevated Tank System

The Farm Water Supply—Continued

When there is a small family and water is wanted for bath room, water closet, kitchen and laundry service only, a hand pump is satisfactory. Each morning enough water can be pumped into the tank to supply the household for all day.

If the family is large, however, or if water is required for the barn, trough and other services, a windmill or power pump should be used. The windmill has the disadvantage that it cannot be depended upon at all times; a large tank must be provided to tide over days when there is no wind and the water is not supplied fresh every day. The power pump is the best outfit of all for the farm; and the gasoline engine is one of the best equipments for supplying the power.

Any woman or boy can operate a gasoline engine and water can be pumped whenever it is wanted. The first cost is not high and the operating cost entails only the cost of an occasional gallon of gasoline. In fact, gasoline power is much cheaper than hand labor—a pint of gasoline costing two cents, can be made to do a piece of work it takes a man hours to do. The engine can also be mounted on a truck and moved about so that it can be used for sawing wood, winnowing grain, or other duties, when not needed for pumping.

The illustrations show gasoline engine driven pumps with both the elevated tank and pneumatic tank system.

Fig. 1 illustrates the elevated tank system. The water is pumped from the well into the elevated tank which is higher than the highest discharge cocks in the house or barn so there will be ample pressure at all cocks. In this view the tank is outdoors over a pump house. A better plan is to place the tank in the attic of the house or in the barn loft where it will be protected from freezing in cold weather.

Fig. 2 shows the pneumatic tank system. In this system the tank is usually located in the basement or buried underground where there will be no danger of freezing in winter and where the water will be kept cool in summer. The tank is air tight and contains compressed air as well as the water. The pressure of this air forces the water up to the discharge cocks. The pumps are built especially for this system so that they pump both air and water, or if desired an ordinary force pump can be used with a separate air pump to supply the air pressure. In addition to forcing the water up through the pipes the air also tends to keep the water pure and healthful.

In these systems, the hot water for the bath tub, kitchen sink and wash tubs is obtained by piping so that a part of it flows through a pipe which passes through the fire box of the kitchen range. After leaving this pipe it passes into a large storage tank from which it is piped to the hot water faucets.

The type of pump used for these water supply systems will vary, depending upon whether the water is to be taken from a deep or shallow well, the capacity required, the distance it is to be forced, etc. There are a large number of styles and the style that should be selected depends upon the local conditions. It is always advisable to consult the manufacturer or dealer so as to be sure of getting the outfit that will best suit local conditions.

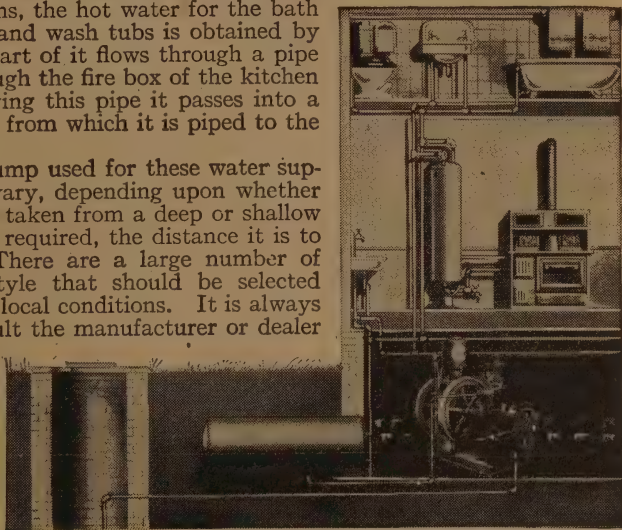


Fig. 2. The Pneumatic Tank System

The Farm Ice House

The value of ice on the farm, particularly in the hot summer months of July and August, has always been underestimated. These are the months in which the flies are the worst, milk sours most quickly, butter is the softest, and vegetables decay, and cooked foods spoil.

The housewife can prevent this if the farmer will build an ice house and put up ice in the winter. The cost of an ice house large enough for ordinary family use, is very small compared with the great amount of good and profit that the use of the ice will bring during the hot summer months.

The medicinal use of ice will more than compensate for the expense of putting up an ice house in the saving of doctor bills alone, to say nothing of the possible saving of a life by having ice convenient.

It is not uncommon in rural districts to find it impossible to secure ice when it is urgently needed.

Have the ice house, when possible, by itself—not in a hollow, or where water can run into it from a bank. Having selected the location, prepare the bottom. If the soil is sandy or of a porous nature, it will need no drain; but if not, great care should be taken to arrange for a drainage. In an ordinary house, dig a trench through the center thirty inches wide, and twelve inches deep. Fill this with loose stone to within three inches of the top, and slope all parts of the bottom to this drain. Then fill to the top with shavings and straw, covering over with loose boards. You will then have a perfect drain that will carry off all water and let in no air.

Next, set posts in the ground to build on. These posts should be about 6"x6" at the corners and set ten or twelve feet apart. Fill in between these with 2"x4" studding set flush with the outside. Put boarding on this. On the boarding, nail 2x4's, putting the outside boarding on them. This makes an air space of four inches. Now set inside another set of 2"x4" studding which will leave a space of ten inches for filling. Ceil on the inside and fill with sawdust or shavings. Be sure it is filled solid and dry. You now have the body of the ice house, with an air space of four inches, and inside, ten inches of filling, making a perfect house that will not easily warm through. Have the inside smooth so that the ice will settle and not catch. Make an ordinary truss roof. The roof should project at least two feet, and can be of shingles or boards. The loft inside, it is well to board over, as it stops all heat from the roof. Openings to the air should be as few as possible and made to close tight.

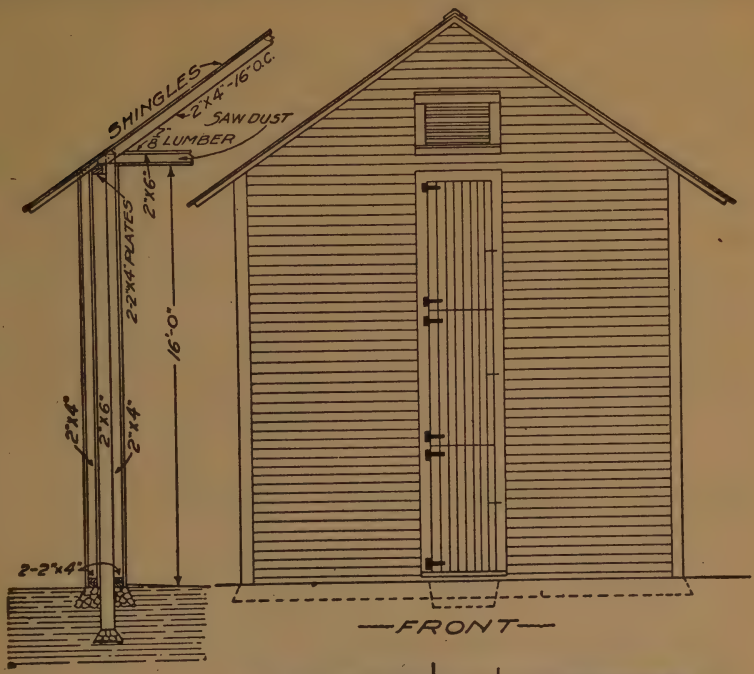
If a more substantial construction is desired, the foundation may be made of brick or concrete.

In regard to the care of the ice, do not neglect it. Be careful that the top is always covered. See that you do not get airholes through the sawdust, as that lets in the hot air and melts the ice fast. When sawdust for filling cannot be secured, you can use straw—rye or oat straw being the best; but there is hardly any place where with a little care through the summer, plenty of sawdust cannot be had. As to size and capacity of houses they will hold the following, for every foot in height of the ice packed fairly solid, and well-frozen:

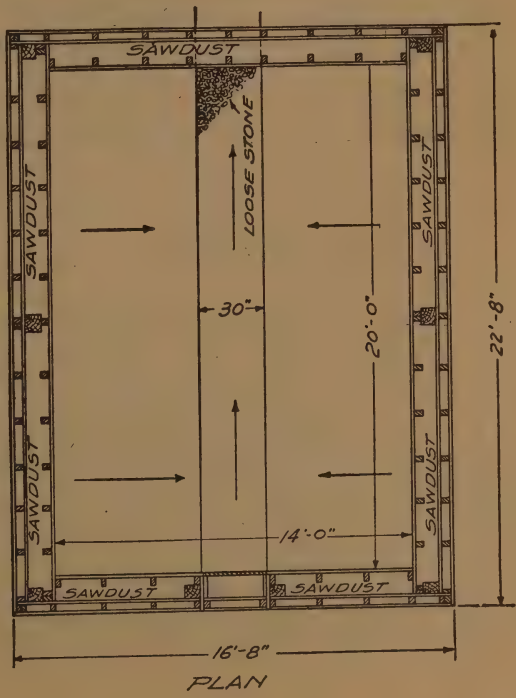
14 x 20, 5 tons; 14 x 25, 6 tons; 14 x 30, 7 tons; 20 x 25, 9 tons; 20 x 30, 11 tons; 20 x 40, 15 tons.

The amount of ice a farmer desires to put up depends naturally upon the purpose for which it will be used. The average farm will require about 200 pounds daily if ice is used to cool the milk, butter, cooked foods, vegetables, etc. The number of months ice is used depends upon the season, but one can be reasonably sure that the six months beginning with May will require ice.

Any lumber dealer can tell exactly the cost of material for building an ice house, by referring to the plans illustrated on page 93. Determine upon the size of a house large enough for your needs, and the dealer can tell you the cost.



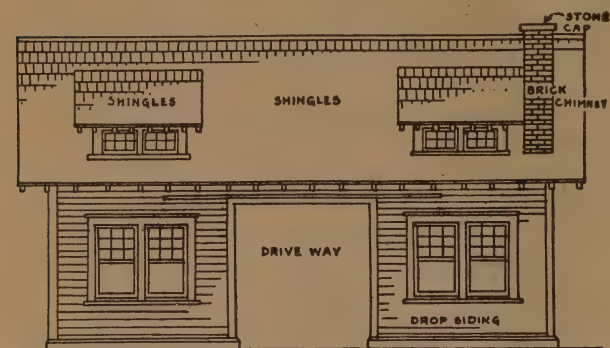
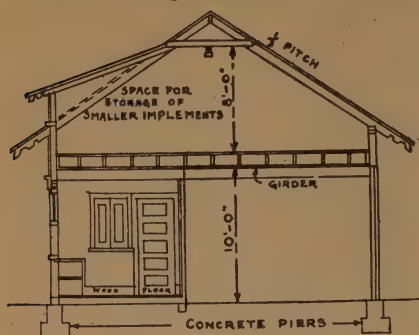
Plans for the
Farm
Ice House



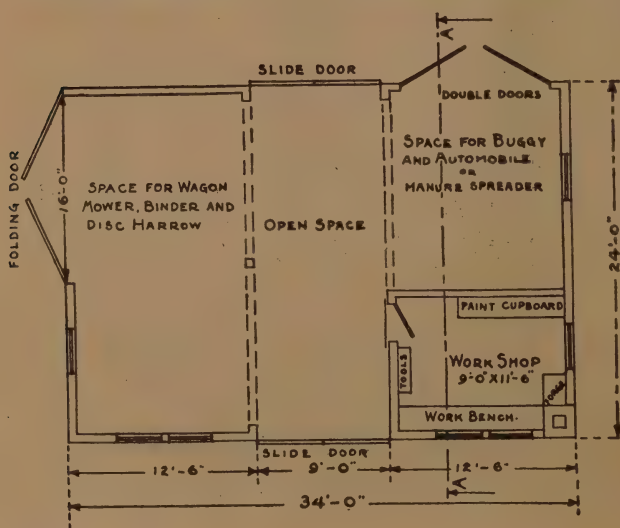
Plan of Farm Machine Shed

The first step necessary in properly caring for your farm machines is to provide a suitable space for housing them. Herewith are sketches prepared by the I H C Service Bureau showing a proposed machine shed which will provide storage space for wagons, harvesting and tillage machines and implements, a garage which can also be used for housing the buggy or spreader, and a work shop.

For more detailed information concerning this proposed machine shed, write the I H C Service Bureau, Harvester Building, Chicago, U S A



Front
Elevation



Ground
Floor
Plan

I H C ALMANAC & ENCYCLOPEDIA

I H C Service Bureau

Have you ever wanted some information relating to farm problems, and not know where to get it? Whether this has been the case or not, we invite you hereafter to send your inquiries to the I H C Service Bureau, Harvester Building, Chicago, which was organized for the purpose of supplying on request the best information obtainable on agricultural subjects. This service is at the disposal of farmers, schools, editors, and the public in general.

Since the Bureau was organized by the International Harvester Company of America in August, 1910, we have answered a large number of inquiries relating to nearly every phase of agriculture, conducted contests, offered premiums for grain exhibits, dairy cow tests, eradication of the cattle tick, etc. We have distributed good seed in some sections, and are planning on broadening this phase of the work. We have established fellowships and scholarships in various colleges, and have loaned farm machines and implements to agricultural colleges and other institutions for laboratory purposes and have loaned lantern slides and fibre exhibits to schools and colleges.

We have issued a number of booklets dealing with various agricultural subjects, which are free for the asking. These booklets have been supplied to a large number of schools, and are being used as supplementary reading in many instances.

We have established three demonstration farms in the South. Our Southern branch office of the Service Bureau is located at Atlanta, Georgia. We are now looking for a farm in the Northwest, and are establishing a branch of the Service Bureau in that district.

We will also, wherever possible, furnish men to deliver lectures on agriculture at Farmers' Institutes, on demonstration trains, etc. Any requests for assistance of this kind should be sent in as early as possible.

Through our co-operation with the United States Department of Agriculture, State Experiment Stations, Agricultural Colleges, etc., we are in a position to answer questions, and give assistance to those who are interested in soils, farm crops, land drainage, dairying, fruit raising, animal husbandry, and other phases of agriculture.

We also prepare articles for the press, and will furnish agricultural data, and photographs for illustration, wherever possible, upon request.

When writing the I H C Service Bureau, Harvester Building, Chicago, be sure to make your questions specific, write legibly, sign your name and give your address. We have been unable to answer many inquiries because no address was given.



One of three I H C Demonstration Farms in the South.
This one is located at Brookhaven, Miss.

THE ALMANAC & ENCYCLOPEDIA

Do You Want to Know?

Then fill in the information requested on this sheet, tear it out along the dotted line, and mail to us promptly. We will keep your name on our mailing list and send you, free of charge, new reading matter which we issue from time to time, relating to agriculture and to new farm machines which will enable you to farm with less expense—less work.

THIS PLACES YOU UNDER NO OBLIGATION

Name.....R.F.D.....
 P. O.....State.....
 County.....Township.....
 How many acres do you farm?.....
 How much stock do you keep?.....
Horses.....Hogs.....Sheep
Cattle, of which.....are Milch Cows
 Do you use a Gasoline Engine?.....Feed Grinder?.....
 Gasoline Tractor?.....
 Manure Spreader?.....Auto Wagon?.....
 Cream Separator?.....Grain Drill?.....
 Hay Press?.....

Indicate by a check mark (thus v) the literature you would like to receive

Check Here		Check Here	
.....	Gasoline Engine literature	.....	Header literature
.....	Gasoline traction engine literature	.....	Thresher literature
.....	Gasoline spraying engine literature	.....	Mower literature
.....	Cream separator literature	.....	Rake literature
.....	Manure spreader literature	.....	Sweep rake literature
.....	Hay press literature	.....	Hay stacker literature
.....	Feed grinder literature	.....	Side delivery rake literature
.....	Wagon literature	.....	Tedder literature
.....	Disk harrow literature	.....	Hay loader literature
.....	Peg tooth harrow literature	.....	Corn planter literature
.....	Spring tooth harrow literature	.....	Corn cultivator literature
.....	Cultivator literature	.....	Corn binder literature
.....	Binder literature	.....	Shredder literature
.....	Header binder literature	.....	Corn picker literature
		.....	Corn sheller literature
		.....	Auto wagon literature

International Harvester Company of America

(Incorporated)

Chicago, U S A

IHC ALMANAC & ENCYCLOPEDIA

If you will send us the names and addresses of ten of your farmer friends, who are prospects for any machines listed, we shall be pleased to place their names on our mailing list, so that next year they may receive one of these almanacs. For your trouble in giving us these names and filling in the information asked, we will send you at once a copy of "For Better Crops," a 160-page book issued by us. This book contains articles by some of the world's greatest farm experts, and will prove of invaluable assistance to you in growing larger and better crops.

FILL IN NAME OF YOUR LOCAL IMPLEMENT DEALER

Name.....

Town..... State.....

Name	Town	State	RFD	Prospect For (Write name of machine)	Indicate by check thus (v) the machines you have in use	
					Check Here	
						Gasoline engine
						Traction engine
						Cream separator
						Manure spreader
						Hay press
						Feed grinder
						Wagons (old) (new)
						Farm trucks
						Disk harrow
						Peg tooth harrow
						Spring tooth harrow
						Cultivator
						Binder (old) (new)
						Header binder
						Header
						Thresher
						Mower (old) (new)
						Rakes (old) (new)
						Sweep rakes
						Hay stackers
						Side del. rakes
						Tedder
						Hay loader
						Corn planter
						Corn cultivator
						Corn binder
						Shredder
						Corn picker
						Corn sheller
						Auto wagon



THE I H C LINE

GRAIN MACHINES

Binders Headers
Reapers Header Binders

HAY MACHINES

Mowers Hay Loaders
Rakes Hay Presses
Sweep Rakes Stackers
Teddies Side Delivery Rakes
Combined Sweep Rakes and Stackers

CORN MACHINES

Planters Pickers
Cultivators Shellers
Binders Corn Stalk Rakes
Huskers and Shredders

TILLAGE

Disk Harrows Cultivators
Spring-Tooth Harrows
Peg-Tooth Harrows
Combination Harrows

GENERAL LINE

Auto Wagons	Binder Twine	Manure Spreaders
Feed Grinders	Kerosene-Gasoline Tractors	Rope
Cream Separators	Threshers	Knife Grinders
Oil and Gas Engines	Grain Drills	Farm Wagons and Trucks

